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The Effects of Alternative Free Trade Agreements on Peru

Evidence from a Global Computable General Equilibrium Model

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Contents

Acknowledgments	vi
Abstract	vii
1. Introduction	1
2. Country Overview	3
3. Geographical and Sectoral Decompositions	5
4. Initial Structures of Protection, Trade, and Production	12
5. Experimental Results	24
6. Conclusion	33
Appendix A: The MIRAGE Model	34
Appendix B: Supplementary Tables and Figure	36
References	77

List of Tables

1.	Geographical structure of Peru's exports and imports, 1999/2005	5
2.	Countries and regions	5
3.	Average applied and faced protection for Peru at the most available detailed level of GTAP sectors	8
4.	Sectoral decomposition	11
5.	Average tariffs faced by Peru's exports, 2001	14
6.	Peru's bilateral structure of exports by sector, 2007	16
7.	Average tariffs applied on Peru's imports, 2001	18
9.	Impact from trade liberalization scenarios on macroeconomic variables for Peru, 2020	25
10.	Impact from trade liberalization scenarios on Peru's total exports by destination, 2020	25
11.	Impact from trade liberalization scenarios on Peru's imports by provenance, 2020	26
12.	Impact from trade liberalization scenarios on tariff revenues for Peru, 2020	27
13.	Impact from trade liberalization scenarios on Peru's production by sectors, 2020	27
14.	Impact from trade liberalization scenarios on Peru's real income, 2020	28
B.1.	Initial average faced protection on exports, 2001	36
B.2.	Initial average applied protection on imports, 2001	38
B.3.	Initial geographic structure of protection, 2001	40
B.4.	Initial structure of exports by region and sector, 2007	42
B.5.	Initial structure of imports by region and sector, 2007	44
B.6.	Initial geographic structure of exports to main destination, 2007	46
B.7.	Initial geographic structure of imports from main origins, 2007	48
B.8.	Initial structure of production by region and sector, 2007	50
B.9.	Impact on macroeconomic variables from a U.S.-Peru FTA, 2020	52
B.10.	Impact on bilateral trade from a U.S.-Peru FTA, 2007	54
B.11.	Impact on production by sector from a U.S.-Peru FTA, 2020	56
B.12.	Impact on macroeconomic variables from a EU27-CAN FTA, 2020	58
B.13.	Impact on bilateral trade from a EU27-CAN FTA, 2020	60
B.14.	Impact on production by sector from a EU27-CAN FTA, 2020	62
B.15.	Impact on macroeconomic variables from U.S.-Peru and EU27-CAN FTAs combined, 2020	64
B.16.	Impact on bilateral trade from U.S.-Peru and EU27-CAN FTAs combined, 2020	66
B.17.	Impact on production by sector from U.S.-Peru and EU27-CAN FTAs combined, 2020	68
B.18.	Impact on macroeconomic variables from a China-Peru FTA, 2020	70
B.19.	Impact on bilateral trade from a China-Peru FTA, 2020	72
B.20.	Impact on production by sector from a China-Peru FTA, 2020	74

List of Figures

1.	Peru GDP per capita growth	3
2.	Protection applied by region in agro-food and non-agro-food sectors, 2001	12
3.	Initial structure of production by region and main sector, 2007	22
4.	Peru's shares in production by sector, 2007	23
5.	Evolution of Peru's Consumer Price Index under trade liberalization scenarios, between 2001 and 2020	29
B.1.	Evolution of Peru's exports from trade liberalization scenarios, between 2001 and 2020	76

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ABSTRACT

By using a global computable general equilibrium model, this report analyzes the impact of various pending free trade agreements for Peru. In December 2007, a Peru–United States free trade agreement (FTA) was finally ratified by the U.S. Congress, replacing the Andean Trade Promotion and Drug Eradication Act, which awarded Peru and other Andean countries nonreciprocal preferential tariffs. A Peru–European Union (EU27) FTA is also being negotiated in the context of Peru’s participation in the integration of the Andean Community (CAN). Finally, as of October 2008 Peru is concluding negotiations for a free trade agreement with China, its third major trading partner after the United States and the EU27. Although these agreements are expected to improve market access, their impact on the economic welfare of the beneficiary countries is dependent on the countries’ structure of current tariffs and trade and the extent to which the new agreements result in trade diversion versus trade creation. The analysis shows that specific features of Peru’s trade and tariff structures make the country a better candidate for a South-South FTA with China than for North-South FTAs with the United States or the EU27.¹

Keywords: WTO, FTA, trade liberalization, CGE modeling

¹JEL Classification: F13, F15.

1. INTRODUCTION

Trade liberalization in Peru has been undertaken primarily in the context of wider macroeconomic policy reforms under structural adjustment programs adopted in the 1990s. There has also been an effort to further integrate the country in regional and international markets. Following the path taken by many World Trade Organization (WTO) members frustrated by the stalled multilateral negotiations, Peru also has sought to retain or expand its market access options through various bilateral trade agreements. More specifically, Peru is in the process of implementing or negotiating reciprocal free trade agreements (FTAs) with the United States, the European Union (EU27), and China, its three main trade partners.

With the United States and the EU27, Peru benefits from nonreciprocal trade preferences under the General System of Preferences (GSP) and under programs designed to help countries engaged in combating drug production and trafficking: the Andean Trade Promotion and Drug Eradication Act (ATPDEA)² and GSP+³ (Europa 2006). In early December 2007, the U.S. Congress ratified an FTA with Peru (Weisman 2007), replacing the ATPDEA. Among the other beneficiaries of the ATPDEA—Bolivia, Colombia, and Ecuador—only Colombia has agreed to enter into an FTA with the United States, although that FTA is still awaiting ratification by the U.S. Congress.

As a member of the Andean Community (CAN), Peru also started trade negotiations in 2007 with the EU27. The EU27 is working toward association agreements with the members of the CAN (Bolivia, Colombia, Ecuador, Peru, and Venezuela) conditional on the completion of full economic integration of the region into a common market, with a common external tariff (CET). Currently, the CAN countries benefit from special nonreciprocal preferences under GSP+ (Europa 2006). In 2006, roughly 55 percent of Peru's exports to the United States entered that market under the ATPDEA, and 48 percent of its exports to the EU27 benefited from GSP+ (WTO 2007b).

Peru has also completed negotiations on an FTA with China in October 2008. An FTA with China will present very different trading conditions for Peru; it will resemble a South-South trade (between developing countries) relationship rather than a North-South (between developing and developed countries) relationship, such as those with the United States and the EU27. It may also offer Peru opportunities for greater market access because of China's rapid economic growth and because the FTA will likely mean larger tariff cuts as China and Peru replace their most-favored-nation (MFN) treatment of each other by reciprocal trade preferences.

In contrast, the United States–Peru FTA and the proposed EU27–CAN FTA are expected to have limited impact on Peru's trade access to the United States and the EU27 but will give the two economic giants free access to Peru's market or the CAN group in the case of the EU27. The implementation of these two FTAs will affect Peru and its CAN trade partners to the extent that it may create trade if Peru's domestic production is displaced by cheaper imports from the United States and the EU27 or it may divert trade if lower-cost imports from other trade partners are displaced due to the preferences afforded to FTA partners. In particular, heavily subsidized agricultural products from the United States and the EU27 will have free access to the Peruvian market, potentially displacing agricultural imports from neighboring countries that do not support their agriculture.

To simulate the impact of these FTAs on Peru, this study uses the Modeling International Relationships under Applied General Equilibrium (MIRAGE) global model in combination with the database from the Global Trade Analysis Project (GTAP 6.1) and the MACMap-HS6 database on

² “ATPA, enacted on December 4, 1991, expired in 2001, but was renewed and modified under the Andean Trade Promotion and Drug Eradication Act (ATPDEA) in 2002. ATPA, as amended by ATPDEA (hereinafter ATPA), authorizes eligible products from four Andean countries—Bolivia, Colombia, Ecuador, and Peru—to enter the United States free of duty. The primary goal of ATPA is to promote broad-based economic development and viable economic alternatives to coca cultivation and cocaine production by offering Andean products broader access to the U.S. market” (USITC 2006, iii).

³ The EU27 GSP+ is an incentive within the General System of Preferences for developing countries to promote best practice in key areas and support sustainable development policies.

protection data.⁴ Specifically, this study examines the effects on real income, production, and trade.

The report is organized as follows. Chapter 2 gives a brief overview of Peru's economy. In Chapter 3, the structures of Peru's trade, border protection, and production offer the basis for the geographical and sectoral aggregation adopted for this study. Chapter 4 examines Peru's protection and trade structures prior to the trade liberalization scenarios, reflecting initial conditions in the MIRAGE model. In Chapter 5, we present results from the following simulations:

- A United States–Peru agreement where we eliminate the average applied tariffs between the two countries over 10 years starting in 2008. Although the FTA between the United States and Colombia is still pending ratification by the U.S. Congress, we include in this scenario a United States–Colombia FTA in accordance with the 2004 FTA negotiations between the two countries. Changes resulting from this scenario are computed
 - First, with respect to a baseline that reflects the current preferred tariff levels from the ATPDEA, and
 - Second, with respect to a supposed baseline that assumes a return to MFN status for the countries beyond 2008.
- An FTA between the EU27 and Peru where, in accordance with the conditions noted earlier, we implement first the full integration of the CAN over 5 years and an FTA between the EU27 and the CAN over 10 years (with both reforms starting at the same time, in 2008).
- Finally, a China-Peru FTA where we eliminate all tariffs between the two countries over 10 years starting in 2008.
- In Chapter 6 we conclude.

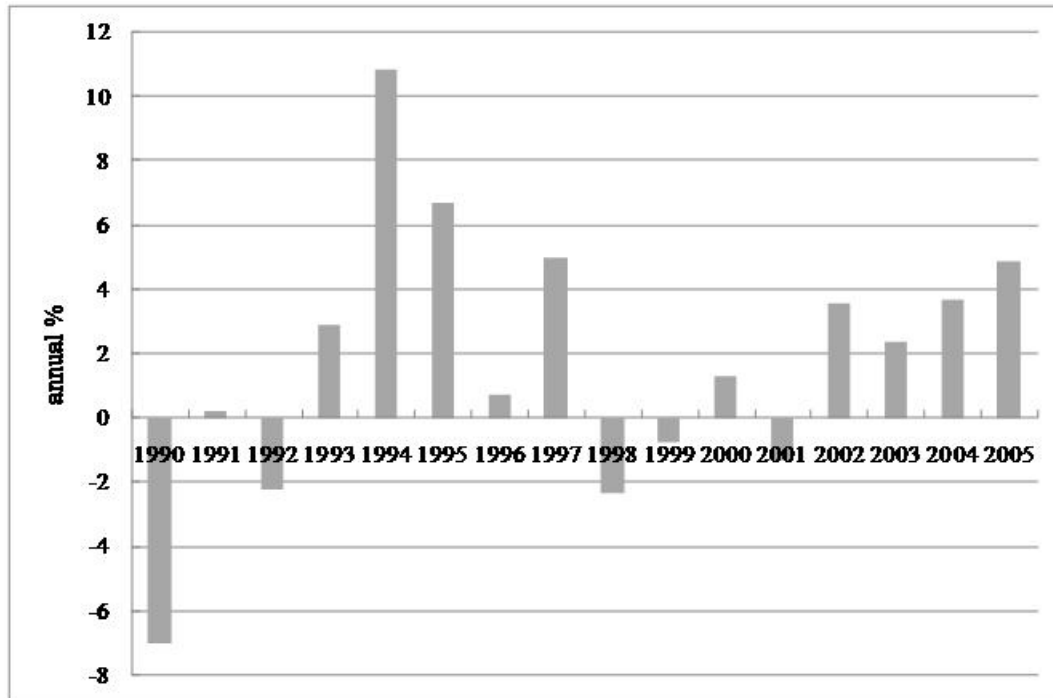
Results show that Peru may not see a significant improvement in market access from FTAs with the United States and the EU27 for its exports that already face relatively low tariffs in these two economies, but rather may experience trade diversion from current CAN and Latin American trade partners. On the other hand, an FTA with China leads to a small but positive gain in real income and gross domestic product (GDP) growth for Peru. Furthermore, the distributional impact of a China-Peru FTA appears to be pro-poor for Peru as the return to real wages registers the largest gain for unskilled agricultural workers.

⁴CEPII (Centre d'Etude Prospectives et d'Informations Internationales) in collaboration with the ITC (International Trade Center) developed and maintained the MIRAGE model.

2. COUNTRY OVERVIEW

Peru is a lower-middle-income country with a per capita income in 2005 of \$2,300 (in 2000 constant US\$). GDP growth has been uneven over the past 15 years, fluctuating between a low of -7 percent (1990) and a high of 12 percent (1994), before leveling off to between 3 and 5 percent in 2002 and 2005 (Figure 1). In the past two years, Peru recorded one of the best performances in the Andean region, with a growth rate of nearly 7 percent. In a reversal from previous years, Peru also experienced a trade surplus in 2004 and 2005 that has been attributed to increased prices of minerals and metals, Peru's main exports (Picciotto 2006).

Figure 1. Peru GDP per capita growth



Source: World Bank (2007).

Peru's structure of GDP indicates the dominant roles of services and industry, which contribute 58 and 35 percent, respectively, to GDP (World Bank 2007). Although agriculture contributed only 7 percent of GDP, it provided employment to 37 percent of the labor force in 2006, an increase of 4.5 percentage points since 2000 (WTO 2007b). Another indicator of the importance of agriculture is its share in total merchandise exports, which stands between 17 and 20 percent (World Bank 2007). Still, the agricultural sector's competitiveness and profitability are low, due to fragmented land ownership as well as farmers' limited access to markets, information, and finance (WTO 2007b).

In 1990, Peru undertook wide economic and structural reforms that included trade liberalization; unification and liberalization of the exchange rate and abolition of restrictions on capital flows; reductions in government expenditure; and privatization of state-owned companies. Although agriculture was not targeted, it was an integral part of the wider macroeconomic reforms that led to the reduction of tariff levels and their dispersion, the elimination of quantitative restrictions on imports, and the elimination of subsidies and price controls (FAO 2003; Field, Field, and Torero 2006). This increase in openness has contributed to a significant increase in trade flows, with exports growing faster than imports, leading to trade surpluses in 2004 and 2005 (WTO 2007b).

In spite of the success in economic performance, 44.5 percent of the population lives below the poverty line, and informal labor remains between 60 and 70 percent of the total labor force (EIU 2007; WTO 2007b).

Peru is a member of the WTO, where it maintains a simplified tariff structure consisting of three duty rates: 0, 12, and 20 percent. Peru applies additional duties of 5 percent to imports of certain products (see below), resulting in practice in five duty rates of 0, 12, 17, 20, and 25 percent applied to 43, 41, 1, 10, and 5 percent, respectively, of tariff lines at the HS6 level. The average applied MFN tariff was reduced from 13.6 percent (including surcharge and variable specific duties) in 1999 to 8.2 percent in 2007; but agricultural imports on average incur higher rates, 15 percent, than nonagricultural products, 7 percent (WTO 2007b). For some products such as milk, yellow maize, rice, and sugar, Peru applies a price band scheme. According to this scheme, a tariff surcharge (reduction) in the form of specific duties is applied when the price on the international reference markets is below (above) the floor price (ceiling price). Between the floor price and the ceiling price, the corresponding tariff rate applies. Among nonagricultural products, higher rates are applied to fish and fish products (11.9 percent) and textiles and clothing (17 percent). Peru bound all tariff items at a ceiling rate of 30 percent with the exception of a few agricultural items (milk, dehydrated butter, wheat, maize, rice, sorghum, wheat flour, boiled grains and wheat groats, sugar, and pasta), which are bound at a final rate of 68 percent (WTO 2007b).

In addition to being a member of the WTO, Peru participates in regional trade agreements at various levels of integration. With the exception of an FTA with Chile, bilateral agreements with other Latin America Integration Association members (Argentina, Brazil, Cuba, Mexico, Paraguay, and Uruguay) take the form of partial scope agreements with limited tariff concessions (WTO 2007b).

Peru is a member of the CAN group, which also includes Bolivia, Colombia, Ecuador, and Venezuela.⁵ However, Peru retains certain flexibilities that exempt the country from participating in the CET schedule and allow it to negotiate trade agreements with other countries. Since January 2006, Peru has granted duty-free treatment to all imports from Bolivia, Colombia, Ecuador, and Venezuela that complies with the original requirements (WTO 2007b).

Other integration processes for Peru include the Asia-Pacific Economic Cooperation (APEC) and the Free Trade Area of the Americas (FTAA).

Peru benefited until December 2007 from trade preferences under the United States' ATPDEA. Under this program, 98 percent of U.S. imports from Peru entered the United States duty-free, whereas less than 2 percent of U.S. agricultural exports and 4 percent of industrial exports entered Peru duty-free. The new FTA, ratified by the U.S. Congress in December 2007, will allow 80 percent of U.S. industrial exports to Peru to enter the country duty-free; and although tariffs on agricultural exports will phase out gradually, Peru will immediately eliminate its price system on its sensitive products (Eissenstat 2006).

Finally, Peru benefits from preferential agreements with the EU27 (GSP+) that grant free market access to Peru's major exports, such as manufacturing products, processed products, and minerals and metals. The EU GSP+ will expire in December 2008, and a reciprocal FTA between the United States and Peru replaced the ATPDEA at the end of 2007. Under the GSP, Bulgaria, Canada, Japan, New Zealand, Norway, Russia, Turkey, and Switzerland (UNCTAD 2005) also grant preferences to Peruvian exports.

⁵ In April 2006, objecting to the U.S. FTAs with Colombia and Peru, Venezuela withdrew from the CAN group to join Mercado Comum do Sul (Mercosur; Malamud 2006).

3. GEOGRAPHICAL AND SECTORAL DECOMPOSITIONS

In this chapter, we identify the geographical and sectoral aggregation specific to our application and used in the MIRAGE model. The countries/regions and sectors important to Peru are derived from Peru's structure of trade flows and protection, using a variety of sources. We focus on Peru's main trading partners in the developed and developing worlds, with emphasis on Central and South America. We also identify products that account for the majority of Peru's traded commodities (such as industrial primary products) or that are subjected to the most protection (such as agriculture). We reconcile these geographical and sectoral structures with the nomenclature of the GTAP 6.1 database, which serves as the main data source for the MIRAGE model.

Geographical Decomposition

Peru's main trade partners are the United States, the EU27, and China. Together, they absorb 60 percent of Peru's exports and contribute 40 percent of Peru's imports. Over the period 1999–2005, Peru's exports to developing countries increased by 30 percent and to developed countries by 12 percent. In particular, exports to China tripled over the same period. Peru's imports from developed countries have decreased by 40 percent, whereas those from developing countries have increased by more than 60 percent, mostly due again to China (Table 1).

Table 1. Geographical structure of Peru's exports and imports, 1999/2005

Destination	1999	2000	2001	2002	2003	2004	2005
Total Peru's exports (US\$ million)	6,019	6,872	6,944	7,648	8,860	12,469	17269
Developed Countries	70.9	65.3	65.1	67.4	67.2	63.6	62.5
U.S.	29.3	28.1	25.5	26.2	27.1	29.5	31.1
Canada	2.0	1.8	2.1	1.8	1.5	2.5	5.9
Australia	0.3	0.6	0.5	0.5	0.6	0.4	0.3
Japan	4.4	4.7	5.4	4.9	4.4	4.4	3.5
New Zealand	0.1	0.0	0.0	0.0	0.0	0.1	0.0
EU27	25.5	21.7	27.2	26.6	25.9	24.3	17.2
Rest of Developed Countries	9.3	8.4	4.3	7.4	7.6	2.4	4.5
Developing Countries	29	34.5	34.7	32.5	32.8	36.4	37.4
Africa	0.5	0.5	0.4	0.4	0.3	0.4	0.4
Asia	10.2	13.4	12.2	13.3	13	15	15.3
China	3.6	6.5	6.1	7.8	7.7	9.9	10.8
Korea	1.5	2.0	1.6	2.2	2.0	1.6	1.3
Rest of Asia	5.1	5.0	4.5	3.3	3.3	3.4	3.2
Europe	1.3	1.1	1.4	1.2	1.1	1.4	1.2
Middle East	0.7	1	0.8	0.7	0.4	0.2	0.1
Central and South America	16.3	18.6	19.9	16.9	17.9	19.4	20.5
Andean countries	5.8	6.5	7.5	6.5	6.1	6.4	6.4
Bolivia	1.7	1.4	1.4	1.2	1.0	1.1	0.9
Colombia	1.7	2.1	2.2	2.1	2.1	2.1	2.0
Ecuador	0.9	1.4	1.8	1.8	1.8	1.7	1.7
Venezuela	1.5	1.6	2.1	1.5	1.2	1.6	1.7
Argentina.	0.5	0.4	0.3	0.2	0.2	0.3	0.4
Brazil	2.9	3.2	3.3	2.5	2.6	2.9	2.6
Chile	2.9	3.9	4.1	3.3	4.7	5.1	6.6

Table 1. Continued

Destination	1999	2000	2001	2002	2003	2004	2005
Mexico	2.8	2.2	1.9	1.7	1.2	1.8	1.9
Panama	0.3	0.7	1.1	0.6	1.7	1.4	1.4
Rest of C&S America	1.1	1.7	1.7	2.0	1.4	1.5	1.3
	100	100	100	100	100	100	100
Provenance	1999	2000	2001	2002	2003	2004	2005
Total Peru's imports (US\$ million)	6,658	7,309	7,199	7,412	8,225	9,757	12,020
Developed Countries	61.5	48.7	46.7	52.7	56	57.9	36.3
U.S.	31.6	24.7	23.8	27.0	28.6	30.3	18.2
Canada	2.0	2.8	2.0	1.0	1.1	1.1	1.6
Australia	0.3	0.4	0.6	0.4	0.4	0.4	0.6
Japan	4.6	6.0	5.5	2.9	2.1	1.6	3.5
New Zealand	0.8	0.5	0.5	0.3	0.2	0.2	0.1
EU27	20.7	13.7	14.0	19.6	21.3	22.1	11.9
Rest of Developed Countries	1.5	0.7	0.4	1.5	2.4	2.2	0.4
Developing Countries	38.5	51.2	53.2	47.1	43.8	42	63.6
Africa	0.3	1.3	2	0.3	0.6	0.3	3.3
Asia	6.7	10.4	12.7	9.4	9.7	9.4	16.2
China	1.7	4.1	5.2	3.2	3.5	3.3	8.5
Korea	2.7	2.9	3.4	2.5	2.6	1.9	2.7
Rest of Asia	2.2	3.4	4.1	3.7	3.6	4.1	5.0
Europe	0.6	1.2	1.5	0.5	0.8	0.5	1.8
Middle East	0.3	0.2	0.4	0.2	0.2	0.3	0.6
Central and South America	30.6	38.1	36.6	36.6	32.5	31.6	41.8
Andean countries	11.4	18.2	15.3	10.7	9.7	9.9	18.5
Bolivia	1.0	0.7	0.8	0.9	0.9	1.1	0.9
Colombia	4.7	5.3	5.0	4.5	4.5	5.2	6.1
Ecuador	1.3	4.3	4.7	2.0	2.0	1.8	7.4
Venezuela	4.4	8.0	4.8	3.2	2.3	1.8	4.1
Argentina.	2.6	4.1	5.6	3.8	3.2	3.1	5.1
Brazil	4.0	4.9	4.4	4.6	5.1	5.4	8.0
Chile	6.7	5.7	6.5	7.8	7.5	7.2	5.1
Mexico	2.7	3.8	3.7	2.7	2.3	2.2	3.5
Panama	1.3	0.4	0.1	1.4	1.3	1.1	0.1
Rest of C&S America	1.8	1.0	1.1	5.6	3.5	2.6	1.6
	100	100	100	100	100	100	100

Source: IMF (2006).

Next to China, Central and South America is the most important region in Peru's trade with developing countries. The region absorbs more than 20 percent of Peru's exports, and contributes 42 percent of its imports. Although Peru enjoys free access to Bolivia, Colombia, Ecuador, and Venezuela, only around 6 percent of Peru's exports are directed to its Andean partners. The Andean countries' share in Peru's total imports has been declining since 1999 to 10 percent by 2004 but seems to have rebounded in 2005 to above 18 percent (Table 1).

Changes in regional and extra regional trade agreements are expected to affect these economies. The geographic aggregation adopted in the model simulations reflects the structure described above and

conforms to the GTAP 6.1 database classification, the main data source for the MIRAGE model. Eleven of the 18 regions shown in Table 2 are in Central and South America; “Rest of Central and South America” includes “Rest of South America,” “Central America,” “Rest of the Free Trade Agreement of the Americas,” and “Rest of the Caribbean”; finally, “Rest of the World” includes all remaining countries not individually listed (Table 2).

Table 2. Countries and regions

#	Region	North/South	Scarcity of Land
1	Canada	North	No
2	EU27	North	Yes
3	United States	North	No
4	Japan	North	Yes
5	Bolivia	South	No
6	Colombia	South	Yes
7	Ecuador	South	Yes
8	Peru	South	Yes
9	Venezuela	South	Yes
10	Argentina	South	No
11	Brazil	South	No
12	Chili	South	Yes
13	Uruguay	South	No
14	Mexico	South	No
15	Rest of C&S America*	South	Yes
16	China	South	Yes
17	Korea	South	Yes
18	Rest of the World	South	Yes

Source: Based on GTAP 6.1 database nomenclature.

Note: * Rest of Central and South America.

Table 2 also illustrates two features of the MIRAGE model that influence the geographic decomposition: (1) the third column categorizes developed countries as “North” and developing countries as “South.” In the MIRAGE model, goods produced in a developed country belong to a different quality range than those produced in a developing economy (Bchir et al. 2002); and (2) the last column differentiates countries with abundant land supply from countries that are land scarce (low elasticity of land supply).⁶

Sectoral Decomposition

The sectoral decomposition emphasizes key sectors for Peru where distortions are high and numerous and takes into account the intensity of the trade with its main trade partners. Table 3 presents average applied duty on imports and average duty faced on exports for Peru and for each GTAP sector. The table also illustrates the difference in trade protection between Peru and its potential FTA partners: the United States, the EU27, and China.

⁶ The classification is based on arable land area per capita (World Bank 2007).

Table 3. Average applied and faced protection for Peru at the most available detailed level of GTAP sectors

	Average applied protection on Peru's imports				Average faced protection on Peru's exports			
	World	United States	European Union	China	World	United States	European Union	China
	(in percent)							
Beverages and tobacco products	14.0	12.8	15.5	13.7	64.0	0.1	0.7	37.4
Sugar cane, sugar beet	10.2	12.0	12.0	12.0	N/A	N/A	N/A	N/A
Meat: cattle,sheep,goats,horse	24.2	15.2	26.2	28.8	47.3	3.3	135.5	N/A
Coal	11.5	12.0	12.0	12.0	1.5	0.0	0.0	3.6
Chemical,rubber,plastic prods	11.9	12.0	12.0	12.0	12.3	0.0	0.1	17.0
Cattle,sheep,goats,horses (livestock)	11.9	12.0	12.0	12.0	7.1	0.0	1.2	7.2
Electronic equipment	12.0	12.0	12.0	12.0	1.4	0.0	0.0	13.4
Electricity	11.9	N/A	12.0	12.0	N/A	N/A	N/A	N/A
Metal products	11.9	12.0	12.0	12.0	13.2	0.0	0.0	12.3
Forestry	12.0	12.0	12.0	12.0	3.1	0.0	0.0	12.9
Fishing	11.9	12.0	12.0	12.0	2.7	0.0	0.0	17.8
Gas	11.6	12.0	12.0	12.0	N/A	N/A	N/A	N/A
Gas manufacture, distribution	12.0	12.0	12.0	12.0	N/A	N/A	N/A	N/A
Cereal grains nec	14.3	14.5	14.5	14.3	30.8	0.0	23.1	3.4
Ferrous metals	11.9	12.0	12.0	12.0	14.5	0.0	0.0	7.9
Leather products	14.8	15.7	15.1	17.9	8.6	1.8	0.0	17.9
Wood products	11.9	12.0	12.0	12.0	4.2	0.0	0.0	9.1
Dairy products	24.6	23.7	24.7	24.2	33.2	14.8	108.3	42.0
Motor vehicles and parts	12.0	12.0	12.0	12.0	13.7	0.0	0.0	29.0
Metals nec	11.9	12.0	12.0	12.0	0.9	0.3	0.1	2.8
Mineral products nec	11.8	12.0	12.0	12.0	7.5	0.0	0.0	19.2
Animal products nec	12.0	12.0	12.1	12.6	6.1	0.0	0.2	12.0
Crops nec	13.7	12.0	12.3	14.8	1.6	0.0	0.0	13.5
Food products nec	16.2	15.7	17.2	19.6	4.7	0.1	0.2	6.0

Source: Authors' calculations based on the MAcMap-HS6 database, 2001.

Table 3. Continued

	Average applied protection on Peru's imports				Average faced protection on Peru's exports			
	World	United States	European Union	China	World	United States	European Union	China
Oil	11.8	12.0	12.0	12.0	3.5	0.0	0.0	0.0
Machinery and equipment nec	12.2	12.2	12.3	12.5	8.2	0.0	0.1	16.1
Meat products nec	27.9	27.5	29.1	29.8	4.1	0.0	0.0	16.0
Oilseeds	11.9	12.0	12.0	12.0	25.4	0.0	0.0	94.7
Transport equipment nec	12.0	12.0	12.0	12.0	5.6	0.0	0.0	7.8
Petroleum,. coal products	11.7	12.0	12.0	12.0	3.0	0.0	0.0	8.8
Processed rice	24.9	25.0	25.0	25.0	18.0	N/A	N/A	1.0
Paddy rice	22.1	19.9	22.8	24.7	11.2	N/A	N/A	1.0
Plant-based fibers	12.0	12.0	12.0	12.0	3.2	0.2	0.0	1.0
Paper products, publishing	11.8	12.0	12.0	12.0	10.1	0.0	0.0	9.6
Sugar	14.2	14.6	14.5	14.4	125.9	46.3	186.6	12.5
Textiles	17.4	17.1	17.8	18.9	8.9	13.1	0.1	15.7
Vegetables, fruit, nuts	23.6	24.6	24.4	24.9	9.4	1.2	8.1	14.8
Vegetable oils and fats	11.4	12.0	12.0	12.0	10.7	0.0	0.5	6.2
Wearing apparel	19.4	19.8	19.3	19.7	10.8	16.2	0.0	21.6
Wheat	16.9	16.8	16.7	16.5	17.1	0.0	2.6	N/A
Wool, silk-worm cocoons	12.0	12.0	12.0	12.0	1.3	0.4	0.0	2.4
Average over all commodities	12.7	12.7	13.0	14.3	4.2	1.9	1.0	6.9

Source: Authors' calculations based on the MAcMap-HS6 database, 2001.

Peru imposes on average much higher tariffs on its imports (12.7 percent) than it faces on its exports (4.2 percent). Yet these averages can hide large differences across sectors. With respect to imports, the most protected sectors in Peru are *meat products nec* (28 percent), *processed rice and dairy products* (both nearly 25 percent), *vegetables, fruits and nuts* (24 percent), and *wheat* (17 percent). Protection of nonagricultural imports usually ranges between 11 and 15 percent, with the exception of “textiles” and “wearing apparel,” for which tariffs reach 17 and 19 percent, respectively (Table 3).

Across its three partners, Peru applies uniform tariffs that are equal to its MFN levels but faces different tariffs on its exports across partners (Table 3). The majority of exported commodities to the United States and the EU27 have zero tariffs, but exports to China face tariffs that range for the majority between 5 and 20 percent.

Low average tariffs Peru faces on exports to the United States and the EU27 mask high tariffs on specific sectors such as “dairy products” and “sugar” with respect to the United States and the EU27 and “meat” with respect to the EU27. These sectors receive high subsidies in these countries; for example, the Organization for Economic Co-operation and Development (OECD) estimates producer support for refined sugar at 58 percent for the United States and 56 percent for the EU27 on average in the period 2001–2003 (OECD 2004).

The tariffs Peru faces on most exports to China are higher than those it faces on most exports to the United States and the EU27; so an FTA with China will likely lead to larger effects than FTAs with the other two countries. Some of the sectors that may stand to gain from an FTA with China are “oilseeds” and “wearing apparel.” An FTA with China would also benefit the industrial sectors in which Peru faces high protection, for example, 29 percent on *motor vehicles and parts*, 19.2 percent on *mineral products*, and 17 percent on *chemical, rubber, and plastic products* (Table 3).

Industrial products dominate Peruvian trade, accounting for 66 percent of merchandise imports and 59 percent of merchandise exports. The main imports are “petroleum oils,” “telecommunication equipment,” “transport equipment,” and “manufactured fertilizers” (ITC 2007). Exports are composed mainly of “minerals and metal products” (gold, copper, silver, zinc), “other primary products,” and “textiles and wearing apparel products” (ITC 2007). The main agricultural imports include “wheat,” “maize,” and “oil and cake from soya beans.” Peru’s agricultural exports include principally “feeding stuff for animals,” including fish meal; “coffee”; and “vegetables and fruits” (ITC 2007; FAOSTAT 2007).

The sectoral aggregation selected for this study and shown in Table 4 reflects the structures of protection and trade described above. As in the geographical aggregation, we take into account the GTAP 6.1 database classification. Eleven of the 20 sectors are in agro-food, sectors for which Peru’s exports meet more trade barriers; 7 are primary or manufacturing, which are key products for Peru’s trade; and 2 are services.⁷

⁷ The geographical and sectoral correspondence tables for the aggregation selected are available from the authors.

Table 4. Sectoral decomposition

#	Sector
	Agro-food
1	Wheat
2	Cereals
3	Vegetables and fruits
4	Oilseeds
5	Other agricultural products
6	Meat
7	Paddy and processed rice
8	Raw milk and dairy products
9	Sugar
10	Beverages and tobacco products
11	Other food products
	Primary and manufacturing
12	Fishing
13	Primary products
14	Textiles and wearing apparel products
15	Petroleum and chemical products
16	Mineral and metal products
17	Vehicle equipment products
18	Other manufactured products
	Services
19	Transport and trade
20	Other services

Source: Based on GTAP 6.1 database nomenclature.

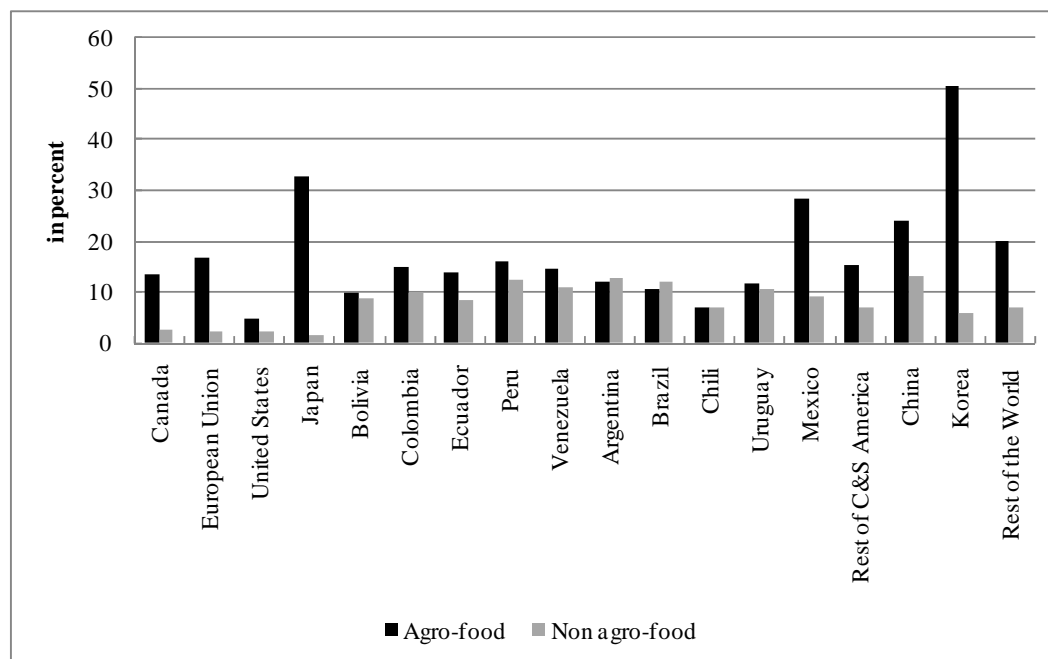
4. INITIAL STRUCTURES OF PROTECTION, TRADE, AND PRODUCTION

The MIRAGE model uses data on protection measures from the MACMap database for 2001 that combine ad valorem tariffs and the ad valorem equivalent of specific tariffs, tariff quotas, prohibitions, and antidumping duties at the bilateral level. Changes in these barriers occurring after 2001 are taken into account by a pre-experiment exercise that incorporates all preferential agreements post-2001 up to 2007, the year of the implementation of the trade liberalization scenarios. In particular, the pre-experiment includes for our purposes the provisions of the ATPDEA (starting in 2004) at the HS6 classification level, and the structures presented in the following chapters are based on these results, which we refer to as “initial values.”

Protection and Trade

Most countries grant greater protection to agriculture than to non agriculture. This is because agriculture was left out of multilateral trade negotiations until 1995, when the WTO was formed and agriculture was made part of the trade talks. In spite of the Agreement on Agriculture (WTO 2007a), progress has been slow and protection on agriculture is still high in both developed and developing countries. Figure 2 illustrates this pattern across the selected countries for this study. In Canada, the EU27, and the Asian countries of Korea, Japan, and China, applied tariffs on agriculture are higher than applied tariffs on non agriculture; applied tariffs on agriculture in these countries are higher than in most Latin American countries as well. With the exception of Mexico, the protection applied to agriculture in Latin American countries is only slightly higher than the protection offered to nonagricultural sectors; and in the case of Argentina and Brazil, agriculture is less protected than non agriculture (Figure 2).

Figure 2. Protection applied by region in agro-food and non-agro-food sectors, 2001



Source: Authors' calculations based on the MACMap-HS6 database, 2001.

This pattern of protection averaged over partner countries and sectors hides the discriminatory characteristic of preference agreements between countries. Tables 5 and 6 detail Peru's structure of protection with respect to its trade partners and specific sectors.

As seen earlier, Peru benefits from trade preferences, and therefore its exports do not meet on average with high protection. Among agricultural exports, *vegetables and fruits* meet with relatively low tariffs from the United States (1.2 percent) compared to the EU27 (8.1 percent). Not surprisingly, the United States absorbs nearly three times more of Peru's exports of *vegetables and fruits* than does the EU27 (Tables 5 and 6). *Other agricultural products*, which include cotton and coffee, are also major agricultural exports for Peru that meet with very low or no tariffs in Canada, the EU27, the United States, and Japan. Together, these economies absorb 84 percent of the sector's exports from Peru. Of the four major destinations for *other food products*, which represent 17 percent of Peru's total exports, China and the "Rest of the World" absorb the highest share of exports, with applied tariffs averaging 6 and 9 percent, respectively (Tables 5 and 6).

Among nonagricultural sectors, Peru's exports meet on average with very low tariffs, especially in countries that import the greatest share, as the United States and the EU27 do for *mineral and metal products* and China and the EU27 do for *primary products*. But Peru's *textile and wearing apparel* exports meet with high tariffs not only from Canada and the United States (16.6 and 14.3 percent, respectively) but also from Latin American countries and China (17 percent). Still the United States is the destination for 46 percent of Peru's *textile and wearing apparel* exports (Tables 5 and 6).

Peru is much more protectionist on its imports, with tariffs ranging from 12 to 25 percent, and much more discriminating across sectors than across partners. Reciprocal FTAs with the United States and possibly the EU27 and China may change Peru's current uniform pattern, which subjects most countries to tariffs of 12 or 25 percent. Even among Andean partners, only a few commodities, such as *oilseeds*, *other agricultural products*, and *fishing* benefit from duty-free treatment (Table 7). Peru's imports from these Andean countries remain limited. Among Latin American countries, Argentina is a major source for Peru's imports of agricultural products. The EU27 and the United States retain the larger shares of nonagricultural imports. In *textiles and wearing apparel* as well as in *other manufactured products*, China competes with the EU27 and the United States (Table 8).

Table 5. Average tariffs faced by Peru's exports, 2001

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Venezuela
				(percent)				
Wheat	2.3	2.6	0.0	188.9	0.0	0.0	0.0	0.0
Cereals	0.0	23.1	0.0	35.3	0.0	11.1	0.0	11.1
Vegetables and fruits	3.2	8.2	1.2	12.5	0.0	0.0	0.0	0.0
Oilseeds	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other agricultural products	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Meat	0.1	0.2	0.0	7.0	0.0	0.0	0.0	0.0
Paddy and processed rice	0.0	8.8	0.0	0.0	0.0	16.6	0.7	16.6
Raw milk and dairy products	130.6	107.3	14.8	188.4	0.0	4.5	4.5	5.0
Sugar	0.2	186.6	46.3	322.9	0.0	7.1	0.0	7.1
Beverage and tobacco products	9.1	1.3	0.1	9.2	0.0	0.0	0.0	0.6
Other food products	2.6	0.2	0.1	4.2	0.0	0.0	0.2	0.0
Fishing	0.2	0.0	0.0	4.7	0.0	0.0	0.0	0.0
Primary products	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1
Textile and wearing apparel products	16.6	0.1	14.3	9.5	0.0	0.0	0.5	0.0
Petroleum and chemical products	0.5	0.1	0.0	1.8	0.0	0.0	0.4	0.8
Mineral and metal products	0.0	0.1	0.3	0.3	0.0	0.0	0.0	0.1
Vehicles and vehicle equipment	1.5	0.2	0.0	0.0	0.0	0.7	1.4	0.0
Other manufactured products	1.5	0.1	0.3	1.3	0.0	0.0	0.9	0.0
Average	2.3	1.0	1.9	3.5	0.0	0.0	0.2	0.1

Source: Authors' calculations based on the MAcMap-HS6 database, 2001.

Table 5. Continued

	Argentina	Brazil	Chile	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World	Average
					(percent)					
Wheat	0.0	0.0	0.0	0.0	0.0	13.3	0.0	2.7	22.5	17.1
Cereals	0.0	8.9	0.0	0.0	0.0	7.5	3.4	495.5	25.6	30.9
Vegetables and fruits	8.7	8.1	7.0	8.7	20.8	19.7	14.8	49.2	16.6	9.4
Oilseeds	4.8	4.8	7.0	4.8	0.0	3.7	94.7	372.3	7.1	25.6
Other agricultural products	6.8	7.4	7.0	7.0	13.1	5.7	11.7	11.9	4.9	2.0
Meat	11.5	10.1	7.0	11.5	10.1	5.4	16.0	3.0	6.5	4.0
Paddy and processed rice	0.0	11.6	0.0	0.0	0.0	59.5	1.0	0.0	29.5	17.7
Raw milk and dairy products	15.5	16.6	7.0	15.5	32.5	21.0	42.0	42.0	31.2	33.8
Sugar	17.5	17.5	7.0	17.5	22.7	19.0	12.5	4.0	31.0	126.0
Beverage and tobacco products	21.5	18.5	7.0	21.5	56.3	25.6	37.4	36.1	124.7	63.3
Other food products	11.6	8.4	7.0	11.6	20.0	8.2	6.0	12.2	8.7	4.5
Fishing	9.7	11.5	7.0	9.7	20.3	16.5	17.8	15.7	6.5	2.7
Primary products	2.6	3.6	7.0	2.6	12.4	4.9	0.0	1.5	2.6	1.7
Textile and wearing apparel products	19.7	18.2	7.0	18.6	26.4	10.3	17.0	12.2	11.2	8.3
Petroleum and chemical products	10.0	12.0	7.0	9.3	14.4	7.4	15.5	6.7	14.1	9.4
Mineral and metal products	11.8	9.4	7.0	11.7	15.7	5.5	3.7	3.6	3.5	1.4
Vehicles and vehicle equipment	15.4	17.6	7.0	10.7	15.0	7.8	17.3	4.3	11.1	7.4
Other manufactured products	11.0	11.1	6.9	11.1	17.3	8.2	12.1	6.4	9.4	5.5
Average	9.2	9.1	7.0	9.0	16.2	7.2	6.9	8.2	7.6	

Source: Authors' calculations based on the MAcMap-HS6 database, 2001.

Table 6. Peru's bilateral structure of exports by sector, 2007

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Venezuela	Argentina
	(in percent)								
Agro-food									
Wheat	2	24	51	5	0	0	0	0	1
Cereals	1	55	14	21	1	2	0	0	0
Vegetables and fruits	4	23	66	0	0	0	0	1	0
Oilseeds	0	5	20	1	0	67	0	0	2
Other agricultural products	5	51	24	4	2	1	1	0	1
Meat	13	12	1	14	0	0	0	0	0
Paddy and processed rice	3	40	18	6	0	0	0	0	1
Raw milk and dairy products	1	7	5	1	8	0	4	3	0
Sugar	0	2	93	0	0	0	1	0	0
Beverage and tobacco products	1	17	22	4	3	2	7	1	1
Other food products	2	18	2	12	1	2	0	1	0
Primary and manufacturing									
Fishing	0	13	58	11	0	0	1	0	0
Primary products	6	15	7	10	0	0	0	0	0
Textile and wearing apparel products	1	13	46	3	3	3	4	6	0
Petroleum and chemical products	1	9	25	1	7	5	8	6	1
Mineral and metal products	0	36	30	3	1	2	1	1	0
Vehicles and vehicle equipment	1	21	26	1	5	2	10	6	1
Other manufactured products	1	9	52	1	2	3	3	3	1
Services									
Transport and trade	2	42	13	7	0	0	0	0	1
Other services	3	35	21	5	0	0	0	0	1

Source: Authors' calculations based on the MIRAGE model.

Table 6. Continued

	Brazil	Chile	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World	Total Exports	Sectoral Export Structure
	(in percent)									
Agro-food										25
Wheat	0	0	0	1	0	3	1	13	100	0
Cereals	0	0	0	0	1	4	0	1	100	0
Vegetables and fruits	0	0	0	0	1	0	0	3	100	3
Oilseeds	0	0	0	0	0	0	0	5	100	0
Other agricultural products	1	1	0	1	1	1	2	5	100	3
Meat	1	23	0	0	0	0	0	35	100	1
Paddy and processed rice	1	0	0	1	1	5	3	23	100	0
Raw milk and dairy products	0	0	0	0	65	1	0	4	100	0
Sugar	0	0	0	0	1	0	0	1	100	0
Beverage and tobacco products	0	5	0	0	30	1	1	8	100	0
Other food products	1	1	0	0	1	34	1	23	100	17
Primary and manufacturing										59
Fishing	0	0	0	4	1	0	0	11	100	0
Primary products	7	5	0	3	2	19	7	18	100	13
Textile and wearing apparel products	1	7	0	2	5	1	1	4	100	6
Petroleum and chemical products	2	7	0	7	13	0	0	6	100	5
Mineral and metal products	4	2	0	1	1	2	0	14	100	29
Vehicles and vehicle equipment	8	7	0	1	8	1	0	3	100	2
Other manufactured products	3	2	0	8	6	1	1	3	100	4
Services										16
Transport and trade	1	1	0	1	1	2	5	24	100	8
Other services	1	0	0	3	1	2	2	25	100	8

Source: Authors' calculations based on the MIRAGE model.

Table 7. Average tariffs applied on Peru's imports, 2001

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Venezuela	Argentina
	(percent)								
Wheat	17.2	16.7	16.8	16.5	0.0	0.0	7.5	7.5	16.6
Cereals	13.9	14.5	14.5	12.4	8.3	5.4	12.3	2.5	14.4
Vegetables and fruits	25.0	24.4	24.6	22.6	0.1	15.0	18.7	1.0	25.0
Oilseeds	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	12.0
Other agricultural products	12.0	12.1	12.0	12.1	0.0	0.0	0.0	0.0	13.4
Meat	23.7	28.1	24.2	22.0	15.9	23.7	21.0	2.0	26.4
Paddy and processed rice	25.0	24.8	22.8	24.9	21.3	11.9	21.2	21.2	22.7
Raw milk and dairy products	24.3	24.7	23.7	19.5	18.1	17.3	17.1	16.3	24.9
Sugar	13.6	14.5	14.6	14.1	11.5	9.5	9.8	7.8	14.5
Beverage and tobacco products	15.2	15.4	12.8	14.4	1.7	0.6	0.3	6.8	16.1
Other food products	14.1	16.3	14.2	13.1	0.9	7.2	2.5	3.6	13.5
Fishing	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	12.0
Primary products	12.0	12.0	12.0	12.0	0.0	7.6	9.6	8.9	12.0
Textile and wearing apparel products	13.7	18.1	18.0	17.7	6.6	7.2	5.1	2.3	13.2
Petroleum and chemical products	12.0	12.0	12.0	12.0	1.9	2.8	5.1	4.5	12.0
Mineral and metal products	12.0	12.0	12.0	12.0	0.8	1.7	2.3	0.6	12.0
Vehicles and vehicle equipment	12.1	12.1	12.1	12.0	0.9	6.6	7.7	4.9	12.1
Other manufactured products	12.1	12.7	12.4	12.1	1.5	2.7	4.1	3.4	12.0
Average	13.6	12.9	12.7	12.3	1.0	5.0	7.9	5.6	13.7

Source: Authors' calculations based on the MAcMap-HS6 database, 2001.

Table 7. Continued

	Brazil	Chile	Uruguay	Mexico	Rest of C&S America (Percent)	China	Korea	Rest of the World	Average
Wheat	17.3	16.3	16.3	18.5	17.9	16.5	16.3	17.1	16.9
Cereals	13.0	18.1	14.7	13.1	13.0	14.3	14.7	14.3	14.3
Vegetables and fruits	22.4	25.0	24.9	24.6	21.4	24.9	24.9	23.0	23.6
Oilseeds	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	11.9
Other agricultural products	13.9	12.1	12.1	12.8	13.0	13.8	12.1	12.7	12.5
Meat	29.5	26.2	27.5	27.1	29.1	29.7	24.7	25.6	26.2
Paddy and processed rice	24.9	0.0	24.7	23.5	24.6	25.0	0.0	24.8	24.5
Raw milk and dairy products	24.9	24.2	25.0	24.7	24.5	24.2	22.7	24.8	24.6
Sugar	14.5	14.5	14.5	14.3	14.5	14.4	14.5	14.4	14.2
Beverage and tobacco products	13.5	16.3	14.6	16.0	13.1	13.7	13.2	12.9	14.0
Other food products	13.3	15.7	13.4	17.5	17.4	18.8	13.9	14.7	14.5
Fishing	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	11.9
Primary products	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	11.8
Textile and wearing apparel products	17.5	17.0	14.3	16.2	19.3	19.1	18.0	17.2	17.7
Petroleum and chemical products	12.0	12.0	12.1	12.0	12.0	12.0	12.0	12.0	11.8
Mineral and metal products	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	11.9
Vehicles and vehicle equipment	12.2	12.9	12.0	12.3	12.5	12.2	12.2	12.1	12.1
Other manufactured products	12.7	12.1	12.0	12.3	13.2	14.8	12.9	12.4	12.5
Average	13.1	13.5	16.9	12.9	13.9	14.2	12.9	12.8	

Source: Authors' calculations based on the MAcMap-HS6 database, 2001.

Table 8. Peru's bilateral structure of imports by sector, 2007

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Venezuela	Argentina
	(in percent)								
Agro-food									
Wheat	23	0	28	0	0	0	0	0	48
Cereals	0	8	21	0	1	0	0	0	64
Vegetables and fruits	15	1	15	0	1	0	0	0	0
Oilseeds	0	0	1	0	51	0	0	0	36
Other agricultural products	4	3	38	0	2	0	1	0	15
Meat	14	12	23	0	3	0	1	0	15
Paddy and processed rice	0	0	2	0	0	0	0	0	3
Raw milk and dairy products	0	19	6	0	9	1	0	0	6
Sugar	0	5	4	0	6	22	0	0	2
Beverage and tobacco products	0	37	5	0	1	6	0	5	4
Other food products	0	4	17	0	2	4	4	2	30
Primary and manufacturing									
Fishing	0	3	0	0	0	0	1	0	0
Primary products	1	1	1	0	2	5	43	11	3
Textile and wearing apparel products	1	12	9	1	2	8	1	1	2
Petroleum and chemical products	0	14	22	3	0	8	2	7	4
Mineral and metal products	1	19	13	6	0	6	2	8	5
Vehicles and vehicle equipment	2	21	32	10	0	1	0	0	1
Other manufactured products	2	17	15	1	1	7	2	1	2
Services									
Transport and trade	3	42	18	3	0	0	0	0	0
Other services	3	44	26	2	0	0	0	0	0

Source: Authors' calculations based on the MIRAGE model.

Table 8. Continued

	Brazil	Chile	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World	Total Imports	Sectoral Import Structure
	(in percent)									
Agro-food										14
Wheat	0	0	0	0	0	0	0	0	100	3
Cereals	0	1	0	0	2	0	0	2	100	1
Vegetables and fruits	0	66	0	0	0	1	0	2	100	1
Oilseeds	6	0	0	0	4	0	0	1	100	0
Other agricultural products	3	4	0	1	11	0	0	17	100	2
Meat	22	5	1	0	1	0	0	2	100	0
Paddy and processed rice	0	0	92	0	0	1	0	1	100	0
Raw milk and dairy products	0	7	0	0	0	0	0	52	100	1
Sugar	0	0	0	5	52	0	0	3	100	0
Beverage and tobacco products	0	31	0	4	4	1	0	2	100	0
Other food products	2	21	0	1	11	0	0	1	100	5
Primary and manufacturing										66
Fishing	0	93	0	0	0	1	0	2	100	0
Primary products	0	11	0	2	0	0	0	20	100	6
Textile and wearing apparel products	7	5	0	3	1	19	13	17	100	3
Petroleum and chemical products	5	9	0	7	1	4	4	11	100	18
Mineral and metal products	8	8	0	3	1	5	2	13	100	6
Vehicles and vehicle equipment	5	3	0	3	0	6	6	9	100	26
Other manufactured products	9	21	0	3	1	12	1	6	100	7
Services										20
Transport and trade	0	0	0	1	2	1	1	26	100	6
Other services	1	0	0	1	1	1	1	20	100	14

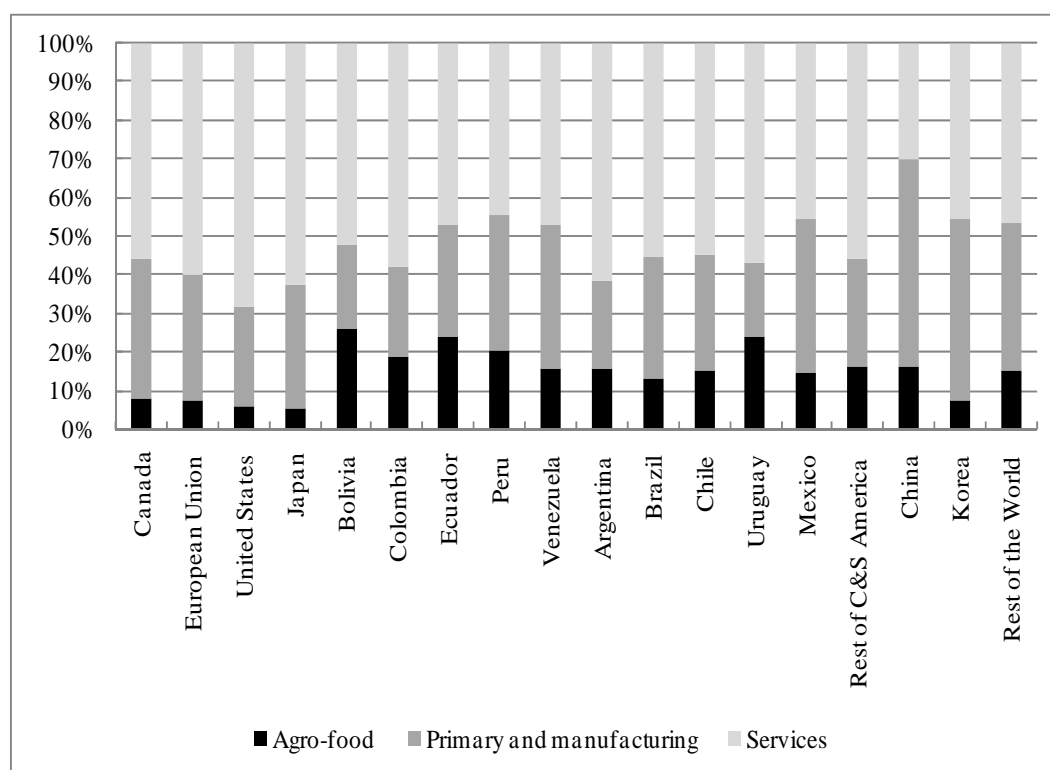
Source: Authors' calculations based on the MIRAGE model.

Overall, the structure of bilateral imports emphasizes the dominance of developed countries: the largest share of world exports is absorbed by developed countries, in particular the United States, the EU27, Japan, and the group “Rest of the World,” which includes Australia, New Zealand, and Switzerland (Table B.6). In addition, developed countries export mostly to each other, although the United States and Japan direct, respectively, nearly or more than 50 percent of their total exports to developing countries, mostly to Asia. Regionally, trade between CAN members is limited and uneven across countries: Peru and Bolivia’s exports to the region are only 5 percent of their total exports, whereas for the other three countries, the shares are 15 percent for Ecuador, 19 percent for Colombia, and 24 percent for Bolivia. Intraregional imports are more evenly distributed, ranging between 10 and 16 percent (Tables B.6 and B.7). China’s share in Peru’s imports is only 4 percent, but this share could change dramatically with a reduction of trade barriers between the two countries.

Production

The structure of production by region and main sectors is presented in Figure 3. In all countries, services contribute the highest share of total production, with the exception of China, where industrial production is highest. In the South American developing countries of Bolivia, Colombia, Ecuador, Peru, and Uruguay, agro-food (including processed products) represents a nonnegligible share of total production, greater than 15 percent for Peru and Colombia and more than 20 percent for Uruguay, Ecuador, and Bolivia.

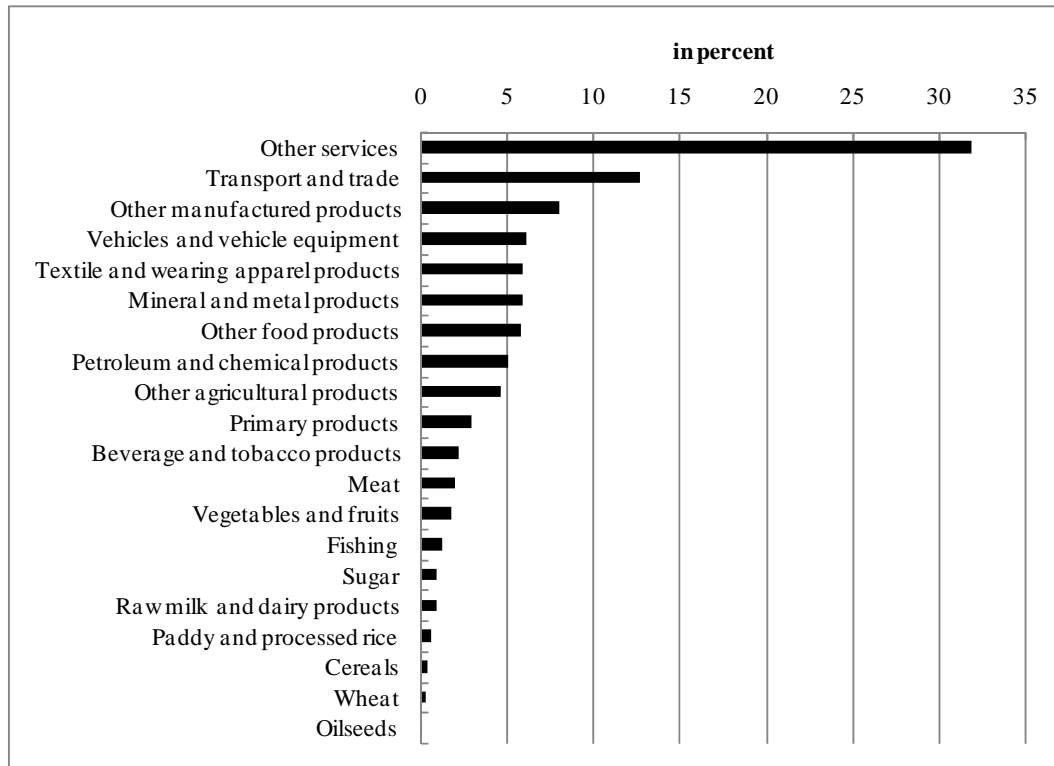
Figure 3. Initial structure of production by region and main sector, 2007



Source: Authors’ calculations based on the MIRAGE model.

Peru's production structure is very diverse, although it is dominated by services, industry, and manufacturing. Among agricultural sectors, *other agricultural products* (including cotton and coffee) and *other food products* (including fishery products) constitute the largest shares, 5 and 6 percent, respectively, of total production. *Fruits and vegetables* and *textile and wearing apparel*, both labor-intensive sectors, are around 2 and 6 percent of production, respectively (Figure 4).

Figure 4. Peru's shares in production by sector, 2007



Source: Authors' calculations based on the MIRAGE model.

5. EXPERIMENTAL RESULTS

The structures of trade flows and protection in Peru with respect to the United States, the EU27, and China suggest that Peru's actual and potential FTAs with these three large economies may have vastly different effects. In this chapter, we present the results from simulating each of these FTAs separately using the MIRAGE model.

The model uses the GTAP 6.1 database and MACMap-HS6 database on protection measures to generate a benchmark for 2001 (see Appendix A for specifications and assumptions for the MIRAGE model). The model performs a preexperiment that includes the main changes that occurred between 2001 and the beginning of the implementation of the different trade reforms, starting in 2007: the end of the Uruguay round, the Chinese accession to the WTO, the enlargement of the EU27 (May 1, 2004, and January 1, 2006), the removal of the Multi Fiber Arrangement (which expired January 1, 2005), the implementation of the African Growth Opportunity Act, and the Everything But Arms agreement. In addition, the baseline includes the ATPDEA, which extended and replaced the Andean Trade Preference Act (ATPA) in August 2002 by providing quota-free access to the U.S. market for Bolivia, Colombia, Ecuador, and Peru on products such as "petroleum oils," some "textiles and wearing apparels" articles, and "watch equipments" (USDHS 2003). The model generates a baseline from 2007 to 2020. Each year, a new equilibrium is reached taking into account capital accumulation and changes in GDP and population following World Bank estimated projections (World Bank 2006).⁸ Each scenario is fully implemented within the same timeframe, from 2007 to 2020, and compared with the baseline. The results reflect the deviations between the simulations and the baseline for each year and are given in percentages for the last year of 2020 (see Figure B.1 for an illustration on exports).

We present the results on production, trade, and real income from the FTA scenarios starting with the United States–Peru FTA.

The Impact of the United States–Peru FTA

In this scenario, the United States–Peru FTA ratified by the U.S. Congress in December 2007 is implemented. This reciprocal agreement, initiated in 2004, replaces the ATPDEA, which came into effect in 2002 and extended the tariff preferences offered to the Andean countries Bolivia, Colombia, Ecuador, and Peru under the ATPA. The ATPDEA was instrumental in promoting textile production and exports in the region because in addition to the items covered in the ATPA (mostly agricultural products), other manufactures such as garments made from local cotton, and woolen products were allowed to enter the United States duty-free (EIU 2007). The new FTA reciprocates these preferences to U.S. exports to Peru. Although the United States–Colombia FTA is pending ratification by the U.S. Congress (TradeAgreements.gov 2007), it is expected to be concluded in 2008 and it is included in this scenario.

We simulate two versions of this scenario:

- In United States–Peru FTA (1), the results reflect percentage changes generated by the new FTA from a baseline representing the actual situation of ATPDEA preferences.
- In United States–Peru FTA (2), the results reflect percentage changes from a scenario where the two countries hold MFN status with each other. This version illustrates the concerns expressed by Peruvian officials that had the United States–Peru FTA not been ratified by the end of 2007, the trade relations between the two countries would have reverted to a situation without preferences.

⁸ The GDP and demographics growth rates until 2015 are based on the World Bank projections available from the "Global Economic Prospects 2005: Trade, Regionalism, and Development." For the longer time line specified in this study, the 2015 rates are used until 2020.

United States-Peru FTA (1). Under the ATPDEA, Andean countries enjoy open access to most U.S. markets but with some restrictions. These preferential agreements exclude “sensitive products” such as tobacco, rice, and cotton when their WTO tariff rate quotas are filled (Bureau, Chakir, and Gallezot 2006). Table 5 shows that for some sectors Peru faces tariffs as high as 46 percent on *sugar*, 15 percent on *raw milk and dairy products*, and 14 percent on *textile and wearing apparel*. But Peru’s exports to the United States face on average tariffs under 2 percent, whereas it applies a tariff of 13 percent on imports from the United States (Table 3).

Peru’s exports increase by more than 8 percent on average (Table 9); not surprisingly the larger increase, 31 percent, accrues to the United States, but exports also increase marginally with respect to all other countries, with the exception of Colombia (Table 10).

Table 9. Impact from trade liberalization scenarios on macroeconomic variables for Peru, 2020

	U.S.-Peru FTA (1)	U.S.-Peru FTA (2)	EU27- CAN FTA	China- Peru FTA
	(in percent)			
Exports (vol _ no intra)	8.01	8.52	8.13	4.49
GDP (vol)	-0.12	-0.06	-0.04	0.12
Real effective exchange rate	-0.37	-0.18	-0.90	0.04
Real return to capital	0.05	0.07	-0.20	-0.16
Real return to land	-0.82	-0.55	0.43	1.33
Real return to natural resources	-0.39	-0.64	-2.35	0.16
Skilled real wages	-0.55	-0.45	-0.39	0.15
Unskilled real wages	-0.41	-0.27	-0.12	0.40
Unskilled real wages in agriculture	-0.57	-0.36	0.08	0.81
Unskilled real wages in nonagricultural sectors	-0.36	-0.25	-0.19	0.26
Real income	-0.19	-0.11	-0.23	0.11

Source: Simulation results.

Notes: U.S.-Peru FTA (1) reports changes with respect to a baseline that reflects preferences from the current ATPDEA. U.S.-Peru FTA (2) reports changes with respect to a baseline without preferences where tariffs are set at MFN levels

Table 10. Impact from trade liberalization scenarios on Peru’s total exports by destination, 2020

Importers	U.S.-Peru FTA (1)	U.S.-Peru FTA (2)	EU27-CAN FTA	China- Peru FTA
	(in percent)			
Canada	2.8	1.6	6.8	0.1
European Union - 27	1.9	1.0	13.0	0.1
United States	31.5	40.5	6.1	-0.2
Japan	2.8	1.7	6.8	0.7
Bolivia	1.1	0.7	5.1	0.0
Colombia	-2.3	-2.6	6.9	0.3
Ecuador	0.8	0.6	18.5	-0.3
Venezuela	1.6	0.7	2.8	0.0
Argentina	1.6	0.7	5.4	0.0
Brazil	1.9	0.8	9.9	0.1
Chili	2.8	1.6	8.7	-0.2
Uruguay	2.8	1.8	3.6	1.1

Table 10. Continued

Importers	U.S.-Peru FTA (1)	U.S.-Peru FTA (2)	EU27-CAN FTA	China- Peru FTA
Mexico	1.8	0.8	7.5	-0.1
Rest of C&S America	2.1	1.1	6.7	0.0
China	3.2	2.1	5.9	24.8
Korea	2.4	1.3	8.7	0.1
Rest of the World	2.3	1.3	6.3	0.5

Source: Simulation results.

Changes in bilateral trade patterns suggest that United States–Peru FTA (1) is trade diverting in imports for Peru to the detriment of other developed economies—Canada, the EU27, and Japan—and to the benefit of the United States. Imports from the United States increase by 58 percent for Peru, but imports from every other trade partner decrease with respect to the baseline (Table 11).

Table 11. Impact from trade liberalization scenarios on Peru’s imports by provenance, 2020

Exporters	U.S.-Peru FTA (1)	U.S.-Peru FTA (2)	EU27-CAN FTA	China-Peru FTA
		(in percent)		
Canada	-21.7	-21.2	-6.1	1.9
European Union - 27	-9.2	-8.7	39.2	-0.4
United States	57.9	58.9	-9.8	-0.1
Japan	-16.6	-16.1	-13.8	-1.2
Bolivia	-3.6	-3.4	24.8	0.6
Colombia	0.0	-0.1	15.9	-3.4
Ecuador	-2.8	-2.5	52.9	-1.4
Venezuela	-2.7	-2.0	29.8	-2.1
Argentina	-14.1	-13.6	-3.6	1.3
Brazil	-3.8	-3.0	-6.4	-4.9
Chile	-3.1	-2.3	-8.8	-2.8
Uruguay	-4.2	-3.2	-3.4	1.3
Mexico	-3.1	-2.4	-7.5	-4.3
Rest of C&S America	-3.9	-3.1	-3.9	-1.1
China	-3.2	-2.3	-5.6	107.0
Korea	-3.4	-2.6	-5.9	-6.4
Rest of the World	-2.9	-2.1	-8.0	-2.6

Source: Simulation results.

When a country decreases tariffs imposed on imports, there is a double effect: on one hand, the tariff is reduced, but on the other hand, the imports are increased; the final effect is uncertain and depends on import elasticities.

Because Peru must make much more effort to lower its tariffs on U.S. imports than the United States must make to lower its tariffs on Peruvian imports (thanks to the existing preferential schemes granted by the main economic power to Peru’s exports), it is not surprising that the FTA creates higher tariff revenue losses for Peru than for the United States. Tariff revenues decrease for Peru by 29.1 percent with the trade reform, whereas they decrease by only 0.8 percent for the United States (Table 12).

Production shifts for Peru show that a few sectors are affected more deeply than others: *wheat* production decreases by nearly 11 percent, whereas *sugar* production increases by nearly 10 percent and

textile and wearing apparel products register production gains of 8 percent (Table 13). *Sugar* and *textile and wearing apparel products* are two of the sectors for which Peru faces high tariffs in the United States; and in the case of *textile and wearing apparel products*, the share in Peru's total exports is 6 percent, with nearly half being exported to the United States (Tables 5 and 6).

Table 12. Impact from trade liberalization scenarios on tariff revenues for Peru, 2020

	U.S.-Peru FTA (1)	U.S.-Peru FTA (2)	EU27-CAN FTA	China-Peru FTA
	(in percent)			
Canada	0.0	0.0	0.0	0.0
European Union - 27	0.0	0.0	-2.7	0.0
United States	-0.8	-1.1	0.0	0.0
Japan	0.0	0.0	0.0	0.0
Bolivia	-0.5	-0.1	-12.2	0.0
Colombia	-41.0	-40.6	-21.0	0.0
Ecuador	-0.5	0.3	-14.5	0.0
Peru	-29.1	-28.6	-27.7	-8.4
Venezuela	-0.4	-0.3	-27.4	0.0
Argentina	-0.1	-0.1	-0.2	0.0
Brazil	0.0	0.0	-0.1	0.0
Chile	0.0	0.0	-0.1	0.0
Uruguay	-0.1	-0.1	-0.2	0.0
Mexico	0.0	0.0	0.0	0.0
Rest of C&S America	0.0	-0.1	-0.1	0.0
China	0.0	0.0	0.0	-0.2
Korea	0.0	0.0	0.0	0.0
Rest of the World	0.0	0.0	0.0	0.0

Source: Simulation results.

Table 13. Impact from trade liberalization scenarios on Peru's production by sectors, 2020

	Initial Values (\$US billion)	U.S.-Peru FTA (1)	U.S.-Peru FTA (2)	EU27-CAN FTA	China- Peru FTA
		(in percent)			
Wheat	0.38	-10.9	-11.5	1.0	0.6
Cereals	0.44	-0.7	-0.8	0.4	1.4
Vegetables and fruits	1.91	-0.1	1.3	0.6	0.1
Oilseeds	0.15	1.0	0.8	1.0	1.9
Other agricultural products	5.06	-0.1	-0.2	0.5	1.3
Meat	2.16	-1.3	-1.4	-1.2	0.2
Paddy and processed rice	0.71	0.7	0.6	0.3	1.2
Raw milk and dairy products	1.06	-1.7	-1.7	-3.5	0.8
Sugar	1.09	9.8	10.6	8.3	0.9
Beverage and tobacco products	2.44	-0.2	-0.2	-0.2	0.1
Other food products	6.26	0.8	0.5	0.8	6.4

Table 13. Continued

	Initial Values	U.S.-Peru FTA (1)	U.S.-Peru FTA (2)	EU27-CAN FTA	China- Peru FTA
	(\$US billion)		(in percent)		
Fishing	1.40	-0.2	-0.2	-0.2	0.3
Primary products	3.25	0.7	0.1	-2.5	0.0
Textile and wearing apparel products	6.45	7.8	7.7	-0.3	-1.2
Petroleum and chemical products	5.46	-2.3	-2.2	0.8	-0.5
Mineral and metal products	6.40	0.0	0.8	4.0	0.1
Vehicles and vehicle equipment	6.68	-4.6	-4.8	-2.4	-2.5
Other manufactured products	8.76	-0.7	-0.5	-0.3	-0.7
Transport and trade	13.78	0.0	0.0	0.1	0.1
Other services	34.48	-0.2	-0.2	-0.1	0.1

Source: Simulation results.

But the gains in these two sectors do not compensate for losses in other sectors, and the net effect is a small but negative impact on real income of -0.19 percent. Changes on the return to factors of production are small but uniformly negative. The largest negative effect is on unskilled real wages in agriculture, suggesting that this scenario does not lead to reduced poverty (Table 9).

There is no noticeable real income effect on the United States, and exports gain by a mere 0.18 percent. This is to be expected, given that the share of United States-Peru trade of total U.S. trade is negligible (Appendix Table B.9). All other CAN countries experience modest but negative changes in real income (Table 14).

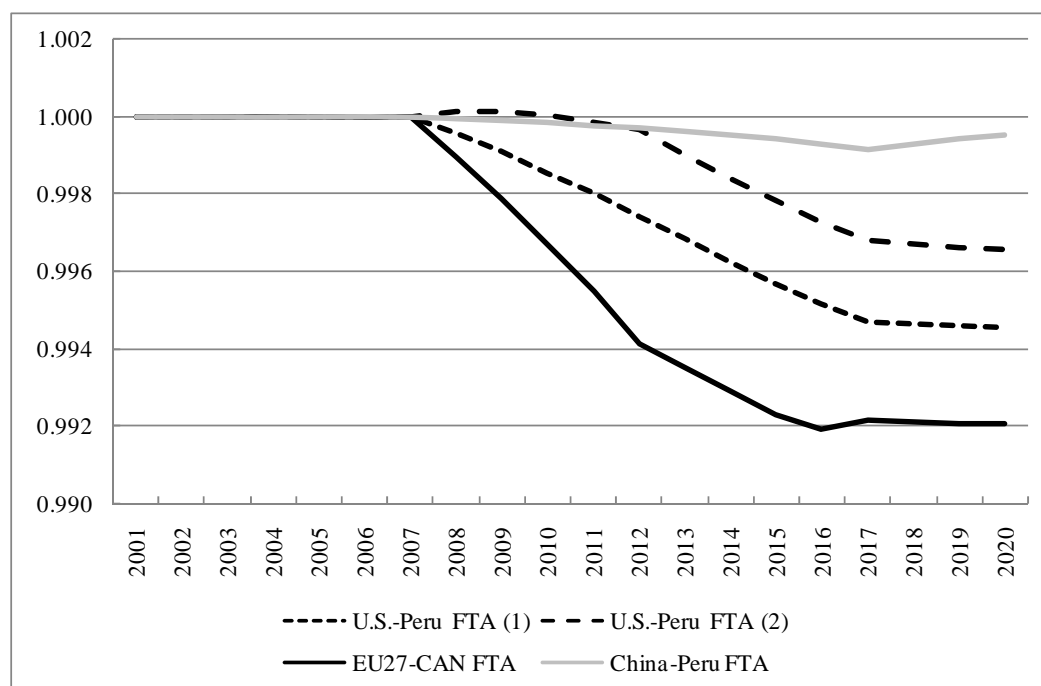
Table 14. Impact from trade liberalization scenarios on Peru's real income, 2020

	US-Peru FTA (1)	US-Peru FTA (2)	EU27-CAN FTA	China-Peru FTA
	(in percent)			
Canada	0.00	0.00	0.00	0.00
European Union - 27	0.00	0.00	0.03	0.00
United States	0.00	0.00	0.00	0.00
Japan	0.00	0.00	0.00	0.00
Bolivia	-0.04	0.03	-0.06	0.00
Colombia	-0.10	-0.05	-0.08	0.00
Ecuador	-0.04	0.09	0.63	-0.01
Peru	-0.19	-0.11	-0.23	0.11
Venezuela	-0.01	-0.01	-0.22	0.00
Argentina	-0.01	-0.01	-0.01	0.00
Brazil	0.00	0.00	0.00	0.00
Chile	-0.01	-0.01	-0.03	-0.01
Uruguay	0.00	0.00	-0.02	0.00
Mexico	0.00	0.00	0.00	0.00
Rest of C&S America	-0.01	-0.01	-0.01	0.00
China	0.00	0.00	0.00	0.00
Korea	0.00	0.00	-0.01	0.00
Rest of the World	0.00	0.00	0.00	0.00

Source: Simulation results.

In spite of these globally relatively negative features for Peru, consumers are expected to obtain access to globally more affordable products with the agreement. Indeed, a decrease in tariffs should lead to price changes for consumers in countries where reforms are undertaken. By computing a consumer price index (CPI), we try to give a proxy of the evolution of the cost of living in the different regions pursuant to the various agreements. In Peru, the consumer would benefit from an FTA with the United States, as the CPI for Peru would decrease by 0.55 percent by 2020 (Figure 5). Conversely, U.S. consumers would face slightly higher prices, as the index would increase by 0.03 percent.

Figure 5. Evolution of Peru’s Consumer Price Index under trade liberalization scenarios, between 2001 and 2020



Source: Simulation results.

United States–Peru FTA (2). This scenario generates larger gains (and smaller losses) for Peru than the previous scenario. This is not surprising since moving from MFN status to an FTA has greater market access potential than does moving from preferential status to an FTA; so Peru still incurs losses from trade diversion created by opening its border to the United States, but its gains from market access are larger. The net effects are still negative but less so. These results are illustrated in Tables 9–14: changes in exports with the United States are higher in the second version (Table 10), and this scenario is less trade diverting in imports (Table 11).

Not surprisingly, the reform still largely reduces Peru’s tariff revenues with a –28.6 percent decrease, although this is a slightly lower figure than that for the previous scenario (Table 12).

Changes in production are not significantly different between the two versions, with the exception of the *vegetables and fruits* sector, which shows gains of 1.3 percent instead of a slight loss under the first version (Table 13).

Changes in real income with respect to a counterfactual without preferences are still negative for Peru but by nearly half the magnitude seen in United States–Peru FTA (1). Losses in returns to the factors of production are also less negative than in the first version, with the exception of returns to *natural resources* (Table 9).

As mentioned in the previous scenario, the cost of living for Peruvians would also decrease by 2020. Yet, in the short term, the cost of living would increase slightly for Peru, as tariffs would be augmented due to a return to the MFN tariffs before implementation of the FTA. As a result, the reduction of the cost of living by 2020 would be more limited than in United States–Peru FTA (1), as the CPI would be lowered by 0.34 percent for the Peruvian economy against a 0.55 percent reduction for the first scenario (Figure 5).

The Potential Impact of an EU27-CAN FTA

The EU27's strategy regarding a Free Trade Area with the CAN group is built, among other things, on the regional integration of the five economies of Bolivia, Colombia, Ecuador, Peru, and Venezuela into a common market with a CET (Europa 2006). In this scenario, we simulate the creation of an Andean common market by eliminating over a period of five years all protection between the five CAN countries, followed by the elimination of protection between the EU27 and the CAN bloc over the subsequent five years.

Peru started its incorporation into the Andean Free Trade Area in 1997 but did not complete the process until the end of 2005. The Andean Free Trade Area had been in operation since 1993 between Bolivia, Colombia, Ecuador, and Venezuela, following a slow process of integration. With the exception of Peru, the CAN countries enjoy full access to each others' markets and as of 1995 adopted a CET for imports from third-party countries. Peru continues to apply and manage its national tariff with complete autonomy (WTO 2007b). Peru's tariffs on imports from other CAN countries range on average from 1 percent for Bolivia to 8 percent for Ecuador (Appendix Table B.3).

Under the GSP, the EU grants Andean countries preferential access to its market. In addition, Andean countries benefit under the GSP+ from the special arrangements accorded to countries combating drug production and trafficking, but this special incentive arrangement is set to expire December 31, 2008 (Europa 2006). Bolivia, Peru, and Venezuela face an average tariff of 1 percent or less for their exports to the EU27. On the other hand, Colombia faces a 5 percent and Ecuador a 17 percent tariff on their exports to the EU27 (Appendix Table B.3).

Under this scenario, Peru's total exports increase by the same magnitude as under the United States–Peru FTA, but the conditions of the former lead to more evenly distributed increases across trade partners (Table 10).

Peru's exports to its CAN partners also increase substantially because of the EU27 requirement that the CAN region be completely integrated before an FTA between the two regions can be fully realized (Table 10). For the same reason, an EU27-CAN FTA is import diverting in favor not only of the EU27 but also of other CAN members and against all other trade partners in Latin America and China (Table 11).

As a consequence of tariff reductions, an EU27-CAN FTA would considerably lower tariff revenues for Peru and other CAN members. Like what has been noticed for the United States–Peru FTA, Peru is more negatively affected than its main partner from the adoption of the agreement. Indeed, Peru needs to create more access to its market than the EU27 will give it with the reform. Tariff revenues decrease by 27.8 percent for Peru, which represents a slightly smaller decrease than in the United States–Peru FTA (–29.1 percent). For the EU27, the reform is less painful in terms of tariff revenue losses, with a decrease of –2.7 percent. Yet, the impact is more negative for the EU27 in the EU27-CAN FTA than it is for the United States in the United States–Peru FTA because the EU27 has to cut its tariffs on imports from all CAN members, whereas the United States has to cut its tariffs only on Peru and Colombia (Table 12). Nevertheless, the EU27-CAN FTA generates important gains for Peru's production of *sugar* (8 percent), which is highly protected in the EU27 (greater than 128 percent tariff rate). *Mineral and metal products* also increase production by 4 percent, but other sectors contract *raw milk and dairy products* by –3.5 percent, *primary products* by –2.5 percent, and *vehicle and vehicle equipment* by –2.4 percent (Table 13). These are important exports that contribute 7, 13, and 21 percent of Peru's total exports to the EU27 (Table 6). So, integrating Peru fully within the CAN bloc mainly increases market access to the

Peruvian market for other Andean countries and the EU27 (Tables 10 and 11). There is trade diversion in exports in favor of the EU27 at the expense of other trade partners for Colombia and Ecuador, and trade diversion in imports for Bolivia, Peru, and Venezuela (Appendix Table B.13).

The production of *vegetables and fruits* increases for Colombia and Ecuador by 24 percent and 55 percent, respectively. Production of *sugar* also increases for all CAN countries, with the exception of Venezuela. Conversely, the industrial sector contracts for most of the CAN countries (Appendix Table B.14).

The loss in real income for Peru is only slightly higher than it is in the case of a United States–Peru FTA. But under the FTA with the EU27, Peru registers a slightly positive effect on unskilled labor in agriculture, suggesting that this scenario may be more pro-poor than a United States–Peru FTA (Table 9). Although Ecuador is the only CAN country that benefits from the EU27–Can FTA in terms of real income, both Ecuador and Colombia register positive gains for unskilled real wages, with higher benefits for agriculture, 8 and 2 percent, respectively (Appendix Table B.12).

In terms of the cost of living, Peruvian consumers would benefit the most from an FTA with the EU27 and the other CAN members, as the CPI would decrease by 0.79 percent by 2020. This remains relatively low, but it is almost twice the reduction that occurs pursuant to the FTA with the United States (Figure 5).

A United States–Peru FTA and an EU27–CAN FTA combined. When both the United States and EU27 FTAs are combined, changes remain very small at the global and sectoral levels. World prices decline for all sectors except *vegetables and fruits*, like results from the EU27–CAN FTA. Macroeconomic results for Peru combine the negative effects of both FTAs where allocation efficiency and terms of trade losses contribute equally to real income losses of 0.31 percent (not shown). On the other hand, an increase of 15 percent in total exports is nearly twice the increase from either FTA (Appendix Table B.15). Changes in bilateral trade reflect the net effects from both FTAs. When the FTAs move trade in the same direction, as is the case of Peru’s exports, the changes are larger than in either FTA taken in isolation (Appendix Table B.16). This scenario is not pro-poor for Peru, where the larger negative effects of the United States–Peru FTA (Appendix Table B.15) offset the slight gains in returns to unskilled real wages in agriculture from the EU27–CAN FTA.

This scenario is trade diverting in imports for all CAN countries, with the exception of Ecuador. The scenario is not trade diverting in exports for Bolivia and Venezuela. In the case of Ecuador, exports are diverted to the EU27 and Peru, whereas its imports increase across all trade partners, with the exception of the United States (Appendix Table B.16).

The results from Peru’s FTAs with the United States and with the EU27 are not surprising. They seem to illustrate the effects of an FTA between a small country and a larger country as examined in Burfisher, Robinson, and Thierfelder (2000) in the case of Mexico in the North American Free Trade Agreement. For small countries, characterized by relatively high tariffs and high trade dependency on their larger FTA partners, the increase in imports arising from eliminating tariffs may exceed the increase in exports from expanded market access. Peru is a small country compared with the United States and the EU27, and has relatively high tariffs. Both FTAs lead to increased duty-free imports at the expense of imports from non-FTA partners. The pressure for imports to increase is stronger than that for exports, creating an imbalance in the current account, which in the model imposes equality between the country’s spending and its earnings of foreign exchange. The MIRAGE model assumes that the current account is constant and fixed to its initial value and allows the real exchange rate to adjust to balance the current account (see Appendix A for the model specifications). Table 9 shows that under North–North FTAs, the real exchange rate depreciates, reflecting Peru’s loss of foreign exchange revenue.

The Potential Impact of a China–Peru FTA

Peru and China concluded the Sixth Negotiation Round, in preparation for the signing of a Free Trade Agreement (FTA) between the two countries (Andina 2008). China has become Peru’s third largest trade partner, and although on average Peru applies a higher tariff on imports from China (14 percent) than it

faces on its exports to China (7 percent), the two economies share a similar structure of protection with respect to the world (Figure 2; Appendix Tables B.2 and B.3). The few exceptions are China's tariff peaks on *oilseeds* (95 percent), *beverage and tobacco products* (49 percent), and *raw milk and dairy products* imports (30 percent). The same patterns can be observed on bilateral protection between the two countries with the exception of *other food products*, for which Peru applies a tariff rate on imports from China three times greater than it faces on its exports to China (Tables 5 and 7).

Still, Peru faces higher protection on its exports to China than on its exports to the United States and the EU27, so an FTA with China may have a much larger impact on increased market access than an FTA with the two developed economies.

In this scenario, we simulate an FTA between Peru and China where all tariff barriers between the two countries are eliminated over 10 years. Peru's exports to China increase by 25 percent, whereas its imports increase by 107 percent at the expense of other partners in Latin America and Asia (Tables 10 and 11). This has a positive impact on agro-food production in Peru. Production expands for all agro-food products and in particular for *other food products* (Table 13). This is an important sector for Peru with respect to China, which is the principal importer (34 percent of the sector's total exports), and it amounts to 17 percent of Peru's total exports (Table 6).

As Peru's imports from China are strongly augmented, thanks to the decrease in tariffs imposed by Peru on its imports from China, Peru's tariff revenues go down with an FTA between the two countries. Initially more protectionist than China, Peru has to lower its own tariffs more than its partner with the reform, leading to more important losses for Peru in terms of tariff revenues with an 8.4 percent reduction. Yet, this decrease is three times smaller than those obtained when Peru concludes an FTA with either the United States or the EU27 (Table 12). The gap between initial tariffs applied on Peru's imports from China and initial tariffs faced by Peru on its exports to China is considerably smaller than corresponding tariff structures between Peru and the United States or Peru and the EU27 (Table 3). This China-Peru FTA scenario leads to positive results for Peru in real income and GDP growth. Although exports increase only by 4 percent, returns to factors of production are all positive except for capital. This FTA benefits labor, but the gains are higher for unskilled than skilled real wages and for agriculture than for nonagriculture. Among the trade liberalization scenarios, an FTA with China represents the most poor option for Peru (Table 9).

China benefits marginally from this scenario due to its size relative to Peru. Total exports increase by 0.07 percent. Real income gains are negligible and only trade with Peru is affected. Production contracts slightly for most agricultural products, especially for *other food products* (Appendix Tables B.18-20).

Although the results for the Peruvian economy from a China-Peru FTA produce more gains than all other FTAs presented in this study, the consumers of the country would almost not benefit from a decrease in consumer prices. With a reduction of 0.05 percent of the CPI by 2020, an FTA with China would give by far the lowest decrease of the index among all the scenarios (Figure 5).

6. CONCLUSION

We used the MIRAGE model to estimate the potential impact of trade liberalization scenarios implemented under various FTAs with Peru. In particular, we examined the effects on macroeconomic variables, trade, and production for FTA partners. We examined the results for 20 sectors and 18 regions, but our discussion focused on the effects on Peru.

Peru benefits from all scenarios in terms of market access, but the effects on real income and GDP are small but negative, with the exception of an FTA with China, which leads to improvement in both real income and GDP. The distributional effect of a China FTA is also beneficial to the poor because of gains to unskilled real wages, especially in agriculture. In addition, Peruvian consumers would have access to more affordable products in all scenarios, thanks to the trade liberalizations undertaken.

In the context of FTAs with the United States and the EU27, Peru has limited scope for increasing market access, given that it faces relatively low protection vis-à-vis these countries. On the other hand, Peru will open its markets for commodities on which Peru imposes high tariffs or, in the case of agriculture, for commodities that are highly subsidized in the United States and the EU27, resulting in trade diversion in imports toward higher-cost imports. Increased duty-free imports lead to lower tariff revenues for Peru that increased export revenues may not offset.

In the case of China, protection patterns are similar to those found in Peru; so trade liberalization is likely to improve market access for both countries. Although the effects may be negligible for China, which has a GDP nearly 30 times that of Peru, they are notable for Peru. This scenario also benefits returns to factors of production; in particular, unskilled real wages in agriculture increase slightly, clearly showing a more pro-poor impact than previous scenarios.

This study draws attention to Peru's protection structure when assessing the effects of FTAs. The elimination of import tariffs may not be sufficient to ensure that Peru will gain from the agreements. It may require further liberalization of domestic agricultural support in the United States and the EU27 and further domestic reforms in Peru to address structural and market rigidities that may prevent the country from responding to trade opportunities.

The results also underline the features of the MIRAGE model, which are appropriate for capturing the gains (or losses) from increased market access and changes in tariff revenue from the various FTAs but are more limited in terms of capturing the gains from increased foreign investment—the larger motivation for a small country to enter into bilateral trade agreements with larger economies. Indeed, the lack of data on foreign direct investments (FDI) does not allow an accurate modeling of the FDI that is expected to deliver positive effects in the context of an FTA. Increase in FDI must lead to higher capital accumulation and hence better growth expectancies. Therefore, it has to be kept in mind that other gains that cannot be properly analyzed in this study may compensate for the rather small real income losses for Peru from the various agreements. Finally, although the model estimates some of the distributional effects of the FTAs through their impact on wages, it can only suggest the possible impact on poverty.

APPENDIX A: THE MIRAGE MODEL

The MIRAGE (Modeling International Relationships under Applied General Equilibrium) model is a multisector, multiregion computable general equilibrium model devoted to trade policy analysis. The model has a sequential dynamic recursive setup with gross domestic product (GDP) projection made out to 2020. Macroeconomic data, in particular in the form of social accounting matrixes, come from the GTAP 6.1 database (see Dimaranan and McDougall 2006). We calculated applied tariff averages using the MAcMap-HS6 methodology.⁹ The study uses the last version of MIRAGE, with GDP growth expectations drawn from the World Bank (World Bank 2006) affecting total factor productivity.¹⁰

On the supply side, the production function in each sector is a Leontief function of added value and intermediate consumption.¹¹ The intermediate consumption is an aggregate constant elasticity of substitution (CES) function of all goods. Similarly, added value is a Cobb-Douglas function of unskilled labor, land, natural resources, and a CES bundle of skilled labor and capital.¹² This nesting allows the modeling of less substitutability between capital and skilled labor than occurs between these two factors and other factors. Factor endowments are fully employed. The only factor for which the supply is constant over time is natural resources.

Investment is equal to savings. Modifications of the national revenue affect savings. In the dynamic application of the model (i.e. the model is run over several time periods), the stock of capital of the current period is equal to the investment of the current period plus the stock of capital of the previous period, which is being depreciated. Therefore, there is a multiplicative effect such that the tariff revenue losses reduce savings (marginal propensity to save is constant), diminishing the capital formation that decreases the future revenues.

Growth rates of labor supply are fixed exogenously. Land supply is endogenous; it depends on the real remuneration of land. In some countries, land is a scarce factor (e.g., Japan, EU27) so the elasticity of supply is low. In others (e.g., Australia, New Zealand, Argentina), land is abundant and its supply elasticity is high (Table 2).

Skilled labor is the only factor that is perfectly mobile. Installed capital and natural resources are sector specific. In a given country or region, new capital—whether domestic or foreign—is assumed to be obtained by assembling intermediate inputs according to a specific combination. The capital good is the same whatever the sector. The new capital is allocated among sectors according to an investment function that depends on the rate of return and on the sector's stock of capital. Unskilled labor is imperfectly mobile between agricultural sectors and nonagricultural sectors according to a constant elasticity of transformation function. This implies that unskilled labor is allocated between the two types of sectors according to the ratio of wages in agricultural and nonagricultural activities. Land is also imperfectly mobile across agricultural sectors.

The MIRAGE model accounts for perfect competition in agricultural activities and imperfect competition in industry and services. However, the introduction of imperfect competition may be costly in terms of computational complexity because it limits the level of disaggregation of regions and sectors.

The demand side is modeled in each region through a representative agent whose propensity to save is constant. The unsaved national income is used to purchase final consumption. A constant elasticity of substitution–linear expenditure system function represents preferences across sectors. This implies

⁹ See the CEPII's website for a description of the MAcMap methodology (CEPII 2001).

¹⁰ The World Bank provides the GDP growth forecast until 2015, and the 2015 GDP growth rate is used for the following years through 2020.

¹¹ That added value and intermediate consumption are not substitutable is a relatively standard assumption in this kind of model (it is also adopted in LINKAGE and the GTAP model developed at Purdue University). Low (and constant) substitution could be assumed, but at the price of reduced tractability.

¹² The “natural resources” factor is interpreted as all natural resources other than land endowment—for example, mining, forestry, and sea resources.

constant elasticity of substitution for the excess of consumption above a minimal level, resulting in different income elasticities of demand across products.

Products coming from the “North” (industrialized countries) are assumed to rank higher in quality than products coming from the “South” (developing countries). Hence, the substitutability between products from the North and products from the South is assumed to be lower than the substitutability between products from the same quality groups. Furthermore, domestic products benefit from a specific status; they are less substitutable with foreign products than foreign products are with each other, within the same quality group.¹³

The macroeconomic closure of the model is obtained in our application by assuming that the sum of the balance of goods and services and of foreign direct investment is constant.

¹³ In the literature, two specifications exist: the consumer either directly compares goods coming from all regions, including domestic goods, or first compares domestic goods and a composite of all foreign goods and then compares foreign goods. The latter way of modeling allows different degrees of substitutability and gives the domestic good a specific status. This hypothesis is also adopted in the LINKAGE and the GTAP models.

APPENDIX B: SUPPLEMENTARY TABLES AND FIGURE

Table B.1. Initial average faced protection on exports, 2001

	Canada	European Union - 25	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela	Argentina
	(in percent)									
Wheat	13.1	23.7	13.9	10.4	31.3		7.9	17.1	8.0	11.5
Cereals	31.6	36.3	27.2	13.1	19.4	9.9	16.9	30.9	5.9	27.7
Vegetables and fruits	14.8	12.0	11.8	11.0	4.9	34.5	34.0	9.4	26.8	16.9
Oilseeds	6.5	12.6	25.0	10.8	24.5	9.0	46.6	25.6	14.1	36.0
Other agricultural products	16.8	7.7	7.3	3.6	3.2	2.9	5.2	2.0	1.7	16.2
Meat	25.5	26.1	27.9	19.3	39.8	37.8	23.1	4.0	22.0	27.3
Paddy and processed rice	100.9	130.7	67.4	33.2	16.9	65.5	23.5	17.7	22.2	21.1
Raw milk and dairy products	36.0	36.1	33.9	33.4	30.8	31.8	27.2	33.8	39.5	32.4
Sugar	13.4	47.7	35.9	43.9	51.9	46.9	58.8	126.0	20.3	42.0
Beverage and tobacco products	9.7	14.9	26.3	19.0	59.6	33.0	56.9	63.3	25.3	27.2
Other food products	11.2	12.2	13.9	13.0	10.6	11.0	6.6	4.5	9.6	11.7
Fishing	5.5	4.3	7.6	5.8	6.5	6.1	2.4	2.7	2.5	13.6
Primary products	0.5	4.1	1.3	2.7	2.1	0.6	1.2	1.7	1.3	4.1
Textile and wearing apparel products	6.6	10.8	12.4	13.1	9.1	11.0	13.0	8.3	10.4	10.7
Petroleum and chemical products	3.1	4.3	4.9	5.7	4.5	7.3	8.6	9.4	4.1	7.4
Mineral and metal products	2.5	4.6	4.9	6.8	0.7	5.4	9.0	1.4	4.1	6.9
Vehicles and vehicle equipment	4.3	4.8	3.8	5.7	3.0	20.3	24.4	7.4	8.9	19.5
Other manufactured products	1.3	4.4	4.6	4.7	1.8	7.2	7.8	5.5	7.1	5.9

Source: Authors' calculations based on the MAcMap-HS6 database.

Table B.1. Continued

	Brazil	Chile	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Wheat	16.9	9.4	9.7	16.7	12.9	20.2	9.1	16.3
Cereals	24.1	10.4	25.0	25.1	15.9	33.3	12.1	31.6
Vegetables and fruits	8.5	13.5	10.6	9.8	23.6	26.6	8.0	13.5
Oilseeds	24.9	4.6	9.6	17.8	17.3	19.5	15.8	11.2
Other agricultural products	13.8	3.8	4.4	15.2	2.4	9.4	8.3	6.0
Meat	44.7	15.8	31.5	16.9	55.5	28.7	17.7	36.4
Paddy and processed rice	59.3	2.2	25.3	130.0	70.6	59.3	64.2	68.9
Raw milk and dairy products	40.5	34.1	32.6	39.0	33.7	36.9	38.8	35.9
Sugar	48.3	48.4	66.8	61.4	66.4	63.8	63.5	56.5
Beverage and tobacco products	55.9	15.0	31.6	6.3	15.8	14.4	19.4	26.5
Other food products	9.3	9.6	13.5	9.2	11.0	9.8	10.9	12.3
Fishing	6.1	7.6	14.4	4.6	3.5	4.4	5.0	4.9
Primary products	1.8	0.9	2.1	0.9	0.8	1.6	1.9	1.2
Textile and wearing apparel products	12.6	14.0	10.5	4.0	6.5	11.3	13.5	9.9
Petroleum and chemical products	6.8	5.6	7.6	3.0	6.4	4.2	7.1	5.1
Mineral and metal products	4.5	1.5	4.4	1.7	4.1	4.7	6.6	4.7
Vehicles and vehicle equipment	7.9	10.1	19.2	1.7	3.3	2.3	5.2	3.0
Other manufactured products	5.5	2.7	4.5	1.9	8.1	5.7	8.4	4.2

Source: Authors' calculations based on the MAcMap-HS6 database.

Table B.2. Initial average applied protection on imports, 2001

	Canada	European Union - 25	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela	Argentina
	(In percent)									
Wheat	1.7	0.8	2.4	186.0	10.0	11.9	8.1	16.9	11.2	5.7
Cereals	0.2	24.8	1.1	46.8	8.5	13.0	12.7	14.3	13.0	7.3
Vegetables and fruits	2.1	18.0	2.8	12.4	9.9	13.0	13.2	23.6	12.7	10.4
Oilseeds	0.0	0.0	4.4	0.7	10.0	10.2	10.1	11.9	10.1	4.7
Other agricultural products	3.2	6.0	1.6	7.2	9.9	8.9	7.6	12.5	8.8	7.4
Meat	27.9	42.8	3.4	52.1	10.0	19.1	18.8	26.2	19.1	10.3
Paddy and processed rice	0.0	121.2	4.8	843.4	10.0	18.9	19.1	24.5	19.1	11.7
Raw milk and dairy products	103.2	47.6	18.8	85.5	6.5	19.6	19.0	24.6	19.4	16.8
Sugar	3.7	130.8	35.0	264.0	9.7	19.8	15.3	14.2	18.9	17.5
Beverage and tobacco products	5.9	13.6	2.4	14.6	10.0	18.9	18.9	14.0	19.0	20.2
Other food products	7.6	9.6	4.1	14.8	9.9	17.4	17.1	14.5	17.1	14.1
Fishing	0.3	5.3	0.2	4.3	9.2	16.3	16.2	11.9	16.2	10.8
Primary products	0.1	0.0	0.0	0.4	9.5	7.9	7.9	11.8	8.1	0.8
Textile and wearing apparel products	13.2	6.9	10.3	8.4	10.0	18.2	17.5	17.7	18.2	19.2
Petroleum and chemical products	2.3	2.6	2.4	1.8	9.4	9.5	7.3	11.8	10.0	11.6
Mineral and metal products	1.4	2.6	1.9	1.0	9.7	9.9	8.3	11.9	14.2	12.8
Vehicles and vehicle equipment	1.8	2.2	1.3	0.1	7.6	8.9	7.3	12.1	9.6	12.9
Other manufactured products	3.1	2.2	2.4	3.4	9.5	13.0	12.1	12.5	12.6	14.4

Source: Authors' calculations based on the MAcMap-HS6 database.

Table B.2. Continued

	Brazil	Chile	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
					(In percent)			
Wheat	4.6	7.0	5.4	28.2	0.9	1.0	2.3	21.6
Cereals	7.0	7.0	6.7	60.0	6.4	22.9	421.4	19.6
Vegetables and fruits	8.8	7.0	10.2	22.9	17.3	20.1	59.0	17.9
Oilseeds	3.6	7.0	4.5	0.8	3.7	95.3	369.0	9.8
Other agricultural products	7.2	7.0	7.0	15.3	5.6	8.6	13.8	12.4
Meat	11.3	7.0	10.3	46.0	20.4	21.6	29.9	33.2
Paddy and processed rice	13.3	7.0	11.8	15.8	49.5	1.0	1000.0	24.8
Raw milk and dairy products	19.7	7.0	16.7	50.7	26.3	30.0	50.0	25.0
Sugar	17.5	7.0	15.4	21.0	46.6	19.8	24.8	35.0
Beverage and tobacco products	19.6	7.0	19.8	40.2	32.8	49.0	28.5	29.8
Other food products	12.0	7.0	13.3	17.9	12.4	20.9	21.6	16.0
Fishing	10.3	7.0	10.6	22.9	18.3	17.4	18.6	7.4
Primary products	0.8	6.6	0.7	9.9	4.6	1.2	3.8	4.3
Textile and wearing apparel products	18.6	7.0	19.1	17.5	10.2	20.8	11.3	11.5
Petroleum and chemical products	9.9	6.9	10.8	8.4	5.8	12.6	7.0	6.2
Mineral and metal products	12.2	7.0	12.4	10.8	6.2	9.4	5.5	7.3
Vehicles and vehicle equipment	13.4	6.8	9.8	7.8	7.0	15.3	4.8	6.4
Other manufactured products	13.1	6.9	14.1	12.6	10.0	12.6	6.1	6.3

Source: Authors' calculations based on the MAcMap-HS6 database.

Table B.3. Initial geographic structure of protection, 2001

Importers	Exporters									
	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela	Argentina
	(in percent)									
Canada		4.6	0.5	2.6	1.0	1.5	1.1	2.3	0.2	2.1
European Union - 27	4.7	0.0	3.5	4.0	0.7	5.3	17.2	1.0	0.3	6.5
United States	0.1	2.7		1.9	0.8	1.1	0.5	1.9	0.2	3.5
Japan	3.7	4.5	2.9		2.8	2.9	4.2	3.5	0.3	8.5
Bolivia	9.3	8.6	8.8	8.5		0.0	0.0	0.0	0.0	9.6
Colombia	9.6	11.4	9.2	9.7	0.0		0.0	0.0	0.0	14.5
Ecuador	7.6	9.8	8.2	8.1	0.0	0.0		0.2	0.0	11.9
Peru	13.6	12.9	12.7	12.3	1.0	5.0	7.9		5.6	13.7
Venezuela	9.6	12.2	9.8	10.8	0.0	0.0	0.0	0.1		15.3
Argentina	12.5	13.7	13.2	13.6	8.9	12.0	10.7	9.2	2.3	
Brazil	8.8	13.8	10.6	14.0	5.9	15.3	8.9	9.1	5.8	3.3
Chili	6.8	6.9	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Uruguay	10.9	11.7	11.4	11.2	7.6	11.7	10.7	9.0	2.1	1.0
Mexico	2.0	17.2	1.1	13.2	4.4	5.0	21.7	16.2	2.2	20.6
Rest of C&S America	11.3	9.1	6.7	6.7	5.5	11.2	9.9	7.2	5.2	6.6
China	10.4	16.3	13.7	15.4	12.7	20.0	14.2	6.9	8.6	24.6
Korea	7.7	9.2	12.9	5.6	7.5	8.6	16.7	8.2	5.6	43.2
Rest of the World	6.2	7.1	8.3	8.2	7.7	12.9	14.6	7.6	5.8	14.6

Source: Authors' calculations based on the MAcMap-HS6 database.

Table B.3. Continued

Importers	Exporters							
	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Canada	4.3	0.3	5.5	0.2	6.2	4.8	3.4	2.7
European Union - 27	6.9	3.2	16.7	1.4	7.6	4.0	3.9	2.3
United States	3.0	1.2	2.7	0.0	4.8	4.5	2.4	2.0
Japan	7.5	4.0	25.1	1.6	13.5	3.7	1.7	3.6
Bolivia	9.1	9.8	9.7	9.6	9.4	9.2	9.0	9.4
Colombia	12.8	10.0	15.9	12.0	13.2	13.0	10.9	10.0
Ecuador	11.1	9.1	14.5	9.8	12.1	12.3	9.1	8.7
Peru	13.1	13.5	16.9	12.9	13.9	14.2	12.9	12.8
Venezuela	13.7	9.7	15.9	12.7	13.3	13.7	12.0	10.8
Argentina	4.7	11.8	0.0	9.7	11.1	15.4	13.9	11.1
Brazil		9.5	1.8	13.4	11.8	15.2	14.2	9.7
Chili	7.0		7.0	0.0	6.7	7.0	7.0	7.0
Uruguay	2.6	11.3		8.4	10.2	14.2	11.8	9.7
Mexico	24.8	2.0	10.1		12.4	21.9	14.6	14.7
Rest of C&S America	10.8	7.7	16.8	12.5	10.8	10.5	6.7	6.8
China	24.2	10.5	21.6	15.4	19.8		15.5	11.0
Korea	37.0	13.1	32.8	8.4	17.9	9.4		7.5
Rest of the World	13.8	8.8	18.9	6.6	14.1	9.0	9.5	8.3

Source: Authors' calculations based on the MAcMap-HS6 database

Table B. 4. Initial structure of exports by region and sector, 2007

	Exporters									
	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela	Argentina
	(In percent)									
Wheat	1.2	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	6.2
Cereals	0.2	0.1	0.7	0.0	0.2	0.0	0.2	0.1	0.0	4.5
Vegetables and fruits	0.5	0.2	0.6	0.0	2.7	3.6	20.3	2.5	0.2	2.9
Oilseeds	0.5	0.0	0.8	0.0	2.7	0.0	0.2	0.0	0.1	6.7
Other agricultural products	1.4	0.7	1.5	0.1	1.3	9.9	6.3	3.0	0.3	1.9
Meat	1.3	0.6	1.1	0.0	0.2	0.1	0.5	1.3	0.0	1.6
Paddy and processed rice	0.0	0.0	0.1	0.3	0.0	0.0	0.4	0.0	0.0	0.3
Raw milk and dairy products	0.1	0.6	0.1	0.0	0.6	0.3	0.1	0.1	0.0	1.1
Sugar	0.1	0.0	0.0	0.0	0.3	1.1	0.3	0.2	0.0	0.2
Beverages and tobacco products	0.4	1.2	0.5	0.1	0.1	0.4	0.1	0.1	0.5	0.7
Other food products	2.2	1.5	1.8	0.4	19.1	4.4	16.3	16.4	1.4	18.8
Agro-food	8.0	5.2	7.8	0.9	27.2	19.9	44.8	23.7	2.7	44.8
Primary products	7.2	0.5	0.5	0.0	31.8	24.1	30.0	13.0	53.2	9.2
Fishing	0.2	0.1	0.0	0.0	0.0	0.1	0.6	0.2	0.1	0.0
Textiles and wearing apparel products	1.5	3.2	2.0	2.5	2.4	5.9	1.4	5.7	0.4	1.2
Petroleum and chemical products	8.6	12.8	11.9	9.7	0.7	14.8	5.1	4.9	22.9	11.1
Mineral and metal products	7.9	6.6	5.3	7.9	9.5	8.0	1.3	29.9	11.9	5.7
Vehicles and vehicle equipment	40.5	34.2	42.0	67.4	5.1	6.2	2.2	1.6	2.2	10.2
Other manufacture products	14.3	7.8	5.4	2.7	8.3	6.9	3.1	3.8	0.8	6.2
Industry	80.0	65.3	67.0	90.2	57.9	66.0	43.8	59.0	91.4	43.5
Transport	4.6	12.1	7.2	4.1	7.5	9.5	6.8	8.8	3.7	5.4
Other services	7.4	17.4	18.0	4.7	7.4	4.6	4.7	8.5	2.2	6.3
Services	12.0	29.5	25.2	8.9	15.0	14.0	11.4	17.2	5.9	11.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table B.4. Continued

	Exporters							
	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
	(In percent)							
Wheat	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1
Cereals	1.2	0.6	0.2	0.0	0.2	0.2	0.0	0.1
Vegetables and fruits	0.7	7.0	2.0	1.9	3.8	0.4	0.1	0.6
Oilseeds	4.9	0.0	0.3	0.0	1.0	0.1	0.0	0.1
Other agricultural products	4.9	1.5	5.0	0.7	3.2	0.4	0.2	2.1
Meat	4.7	1.0	10.7	0.2	0.6	0.1	0.1	0.7
Paddy and processed rice	0.0	0.0	6.2	0.0	0.1	0.1	0.0	0.1
Raw milk and dairy products	0.1	0.3	3.9	0.0	0.1	0.0	0.0	0.2
Sugar	2.5	0.0	0.2	0.1	2.7	0.0	0.0	0.2
Beverages and tobacco products	0.1	3.2	1.9	1.0	1.5	0.2	0.2	0.3
Other food products	7.0	10.0	6.2	1.1	3.4	1.0	0.8	2.4
Agro-food	26.1	23.5	36.7	5.1	16.6	2.5	1.4	6.7
Primary products	6.8	13.5	0.1	6.9	1.9	0.9	0.0	16.8
Fishing	0.1	0.5	0.4	0.0	0.3	0.1	0.1	0.2
Textiles and wearing apparel products	1.6	0.8	4.3	5.3	14.7	22.7	10.0	7.2
Petroleum and chemical products	7.8	6.9	10.4	4.5	7.3	6.4	12.9	9.3
Mineral and metal products	10.9	27.5	2.1	5.1	6.0	6.0	7.5	6.9
Vehicles and vehicle equipment	22.6	2.5	4.1	61.2	14.8	36.0	54.8	23.7
Other manufacture products	11.3	12.6	14.8	4.5	6.7	20.7	4.2	7.4
Industry	61.2	64.2	36.1	87.5	51.8	92.8	89.5	71.5
Transport	3.7	7.7	18.4	3.7	16.1	2.9	3.7	12.2
Other services	9.1	4.6	8.8	3.6	15.4	1.7	5.4	9.6
Services	12.8	12.2	27.1	7.3	31.6	4.6	9.1	21.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' calculations based on the MIRAGE model.

Table B. 5. Initial structure of imports by region and sector, 2007

	Importers									
	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela	Argentina
	(in percent)									
Wheat	0.0	0.1	0.0	0.3	1.3	1.4	1.3	3.4	0.9	0.0
Cereals	0.1	0.1	0.0	0.5	0.1	1.8	0.3	1.5	0.6	0.0
Vegetables and fruits	1.1	0.9	0.6	0.7	0.4	1.0	0.6	0.7	0.7	0.6
Oilseeds	0.1	0.4	0.0	0.4	2.1	0.6	0.1	0.3	0.2	0.0
Other agricultural products	0.8	1.5	0.8	1.7	1.1	1.3	1.2	1.5	0.7	0.8
Meat	0.6	0.4	0.4	1.9	0.2	0.6	0.2	0.5	0.3	0.7
Paddy and processed rice	0.1	0.1	0.0	0.1	0.2	0.3	0.0	0.2	0.0	0.0
Raw milk and dairy products	0.1	0.1	0.1	0.2	1.0	0.5	0.1	0.9	1.2	0.2
Sugar	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.5	0.0
Beverages and tobacco products	0.6	0.4	0.7	0.8	1.0	0.7	0.4	0.5	1.1	0.3
Other food products	2.0	1.9	1.3	4.1	6.7	3.8	4.3	4.5	4.4	2.0
Agro-food	5.6	5.9	4.0	10.8	14.3	12.1	8.7	14.1	10.6	4.7
Primary products	2.2	9.1	5.9	11.7	0.1	0.4	0.2	6.3	0.2	1.3
Fishing	0.1	0.2	0.1	0.4	0.0	0.0	0.0	0.2	0.0	0.1
Textiles and wearing apparel products	3.5	6.6	7.0	6.1	5.5	4.4	3.8	3.2	4.4	3.7
Petroleum and chemical products	11.7	8.7	8.6	8.7	21.5	19.0	21.6	18.1	15.5	17.4
Mineral and metal products	8.5	6.2	6.4	5.6	11.6	7.4	10.3	6.0	8.0	6.6
Vehicles and vehicle equipment	47.3	28.2	43.9	27.6	25.5	32.6	33.6	25.6	40.1	30.8
Other manufacture products	7.7	8.0	10.6	8.1	8.1	5.6	7.9	6.6	7.4	8.6
Industry	80.9	67.0	82.6	68.2	72.2	69.4	77.5	66.0	75.7	68.5
Transport	4.3	10.7	6.5	9.8	6.3	9.0	9.4	6.2	6.0	14.0
Other services	9.1	16.4	6.9	11.2	7.1	9.5	4.4	13.6	7.7	12.8
Services	13.4	27.0	13.4	21.0	13.5	18.5	13.8	19.8	13.7	26.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table B.5. Continued

	Importer							
	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
	(In percent)							
Wheat	1.4	0.3	0.1	0.3	0.6	0.1	0.4	0.6
Cereals	0.1	0.9	0.3	0.9	0.5	0.2	0.6	0.4
Vegetables and fruits	0.6	0.2	0.6	0.4	0.6	0.4	0.2	0.5
Oilseeds	0.2	0.1	2.1	0.8	0.2	1.5	0.3	0.3
Other agricultural products	0.7	0.8	2.3	1.1	0.8	4.1	2.1	1.0
Meat	0.2	1.2	0.6	1.3	0.8	1.0	0.9	0.8
Paddy and processed rice	0.2	0.1	0.0	0.1	0.5	0.1	0.0	0.2
Raw milk and dairy products	0.3	0.2	0.1	0.6	0.9	0.2	0.1	0.5
Sugar	0.0	0.1	0.4	0.0	0.1	0.1	0.3	0.3
Beverages and tobacco products	0.3	0.2	1.3	0.2	0.9	0.2	0.4	0.7
Other food products	1.3	2.4	5.1	1.7	3.1	1.7	2.1	2.1
Agro-food	5.3	6.6	12.9	7.4	9.1	9.6	7.4	7.4
Primary products	5.7	10.4	4.6	0.7	4.7	5.5	15.1	1.1
Fishing	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.1
Textiles and wearing apparel products	1.8	5.7	4.3	4.7	9.8	8.1	3.7	4.8
Petroleum and chemical products	19.2	13.5	21.1	14.9	13.0	13.9	10.5	11.4
Mineral and metal products	5.3	5.8	6.2	8.1	6.5	9.0	9.4	7.5
Vehicles and vehicle equipment	37.6	33.8	23.7	47.7	36.9	32.5	30.6	39.2
Other manufacture products	5.7	6.2	11.0	6.1	7.2	4.7	4.0	8.2
Industry	75.4	75.3	71.1	82.2	78.1	73.8	73.6	72.2
Transport	6.8	11.7	8.6	4.1	5.1	12.5	8.9	7.4
Other services	12.5	6.3	7.4	6.2	7.7	4.1	10.1	13.0
Services	19.3	18.1	16.0	10.3	12.8	16.6	18.9	20.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' calculations based on the MIRAGE model.

Table B. 6. Initial geographic structure of exports to main destination, 2007

Exporters	Importers								
	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Canada		10	74	3	0	0	0	0	0
European Union - 27	1	59	11	3	0	0	0	0	0
United States	16	30		8	0	0	0	0	1
Japan	2	19	27		0	0	0	0	0
Bolivia	2	15	14	3		9	1	4	10
Colombia	2	20	36	2	0		6	2	11
Ecuador	1	19	36	3	0	6		6	3
Peru	2	27	22	6	1	2	1		2
Venezuela	1	10	47	1	0	3	1	1	
Argentina	1	21	10	2	1	1	0	2	1
Brazil	1	28	23	4	0	1	0	0	1
Chili	2	26	18	11	1	1	1	2	1
Uruguay	4	24	12	3	0	1	0	1	2
Mexico	3	7	79	1	0	0	0	0	0
Rest of C&S America	4	26	33	4	0	0	0	0	1
China	2	22	32	13	0	0	0	0	0
Korea	2	17	21	9	0	0	0	0	0
Rest of the World	1	30	17	9	0	0	0	0	0

Source: Authors' calculations based on the MIRAGE model

Table B.6. Continued

Exporters	Importers									Total
	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World	
	(in percent)									
Canada	0	0	0	0	1	1	2	1	6	100
European Union - 27	0	1	0	0	1	1	2	1	19	100
United States	1	2	0	0	10	2	4	3	22	100
Japan	0	1	0	0	1	2	11	6	31	100
Bolivia	3	15	2	1	1	1	1	1	16	100
Colombia	0	2	1	0	2	7	1	1	6	100
Ecuador	1	0	2	0	1	7	1	4	9	100
Peru	0	3	3	0	2	2	9	2	16	100
Venezuela	0	2	1	0	2	10	1	0	18	100
Argentina		19	9	2	1	2	6	2	21	100
Brazil	7		2	1	3	3	5	2	17	100
Chili	2	4		0	4	2	8	4	11	100
Uruguay	9	16	2		3	4	4	1	16	100
Mexico	0	1	0	0		2	1	0	4	100
Rest of C&S America	1	2	0	0	3	10	2	2	13	100
China	0	0	0	0	1	1		3	25	100
Korea	0	1	0	0	2	2	16		29	100
Rest of the World	0	1	0	0	1	1	8	3	29	100

Source: Authors' calculations based on the MIRAGE model

Table B. 7. Initial geographic structure of imports from main origins, 2007

Exporters	Importers								
	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Canada		1	16	2	1	3	2	2	3
European Union - 27	15	59	23	20	16	23	19	21	22
United States	61	10		18	15	31	24	22	30
Japan	4	3	10		2	5	7	4	4
Bolivia	0	0	0	0		1	0	1	1
Colombia	0	0	0	0	3		11	3	9
Ecuador	0	0	0	0	1	3		5	1
Peru	0	0	0	0	6	1	2		1
Venezuela	0	0	1	0	1	5	3	3	
Argentina	0	0	0	0	13	1	1	6	1
Brazil	0	1	1	1	19	4	3	4	5
Chili	0	0	0	1	9	2	4	7	1
Uruguay	0	0	0	0	0	0	0	0	0
Mexico	2	0	10	1	2	4	3	3	4
Rest of C&S America	1	1	2	1	2	2	2	1	4
China	4	4	11	14	3	3	4	4	3
Korea	1	1	3	4	1	2	3	3	3
Rest of the World	10	19	23	38	7	10	11	12	8
Total	100	100	100	100	100	100	100	100	100

Table B.7. Continued

Exporters	Importers								
	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Canada	1	2	2	1	2	3	2	1	1
European Union - 27	29	32	26	23	15	19	17	17	32
United States	20	24	18	12	63	25	11	19	13
Japan	3	5	4	2	3	9	16	16	9
Bolivia	0	0	0	0	0	0	0	0	0
Colombia	0	0	1	0	0	1	0	0	0
Ecuador	0	0	1	0	0	1	0	0	0
Peru	0	0	1	0	0	0	0	0	0
Venezuela	0	1	1	2	0	3	0	0	0
Argentina		8	14	17	0	1	1	0	0
Brazil	19		7	15	1	2	1	1	1
Chili	2	1		2	1	0	1	1	0
Uruguay	1	1	0		0	0	0	0	0
Mexico	2	1	3	2		4	0	0	0
Rest of C&S America	2	2	1	4	1	7	0	1	1
China	5	2	6	4	2	4		9	7
Korea	2	3	3	2	2	5	9		3
Rest of the World	13	18	12	13	9	13	42	34	32
Total	100	100	100	100	100	100	100	100	100

Source: Authors' calculations based on the MIRAGE model.

Table B. 8. Initial structure of production by region and sector, 2007

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Wheat	0.3	0.1	0.0	0.0	0.2	0.1	0.0	0.3	0.2
Cereals	0.2	0.1	0.1	0.0	0.9	0.3	0.5	0.4	0.6
Vegetables and fruits	0.2	0.4	0.2	0.3	3.4	2.2	4.9	1.8	1.5
Oilseeds	0.2	0.1	0.1	0.0	1.4	0.2	0.1	0.1	0.1
Other agricultural products	2.0	1.1	0.7	0.5	4.6	4.4	4.6	4.7	2.5
Meat	1.3	1.2	0.9	0.3	4.3	2.9	2.4	2.0	1.2
Paddy and processed rice	0.0	0.0	0.0	0.6	3.3	0.7	1.8	0.7	0.1
Raw milk and dairy products	0.9	1.1	0.6	0.4	1.5	2.2	1.9	1.0	1.9
Sugar	0.0	0.2	0.2	0.2	0.8	0.7	0.5	1.0	0.4
Beverages and tobacco products	0.6	1.0	0.9	0.8	2.3	1.4	1.4	2.3	2.3
Other food products	2.1	2.2	1.8	2.1	3.2	3.5	5.6	5.8	5.0
Agro-food	7.7	7.4	5.5	5.3	26.0	18.6	23.8	20.0	15.6
Primary products	3.0	0.4	0.6	0.2	6.5	4.4	9.0	3.0	9.2
Fishing	0.2	0.2	0.0	0.2	0.1	0.3	1.9	1.3	0.4
Textiles and wearing apparel products	1.3	1.5	1.3	1.3	1.6	2.2	2.4	6.0	2.7
Petroleum and chemical products	8.9	6.8	5.6	5.8	5.5	5.3	6.8	8.1	6.4
Mineral and metal products	5.3	6.1	4.8	5.1	4.3	6.3	6.0	5.0	8.5
Vehicles and vehicle equipment	4.9	5.6	3.6	5.3	2.5	3.2	2.0	5.9	5.4
Other manufacture products	12.8	11.8	9.9	13.9	1.2	1.9	1.0	6.2	4.5
Industry	36.2	32.4	25.9	31.9	21.6	23.6	29.2	35.5	37.1
Transport	17.0	15.5	17.6	18.3	21.1	18.7	21.1	12.7	23.5
Other services	39.0	44.7	51.0	44.5	31.3	39.1	25.9	31.8	23.8
Services	56.1	60.2	68.6	62.8	52.3	57.8	46.9	44.6	47.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' calculations based on the MIRAGE model.

Table B.8. Continued

	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Wheat	0.7	0.0	0.7	0.7	0.1	0.2	0.3	0.1	0.7
Cereals	0.8	0.3	0.5	0.4	0.4	0.4	0.3	0.0	0.5
Vegetables and fruits	0.8	0.2	1.9	1.3	0.9	1.6	4.6	1.1	1.8
Oilseeds	1.1	0.8	0.0	0.2	0.0	0.4	0.2	0.0	0.3
Other agricultural products	2.1	3.0	2.4	5.4	2.3	3.2	4.4	0.9	3.6
Meat	2.1	1.7	1.6	3.8	3.3	2.1	0.6	0.7	1.1
Paddy and processed rice	0.1	0.3	0.1	1.8	0.0	0.6	1.6	1.6	1.2
Raw milk and dairy products	1.5	1.2	0.8	2.6	0.8	1.4	0.1	0.5	1.5
Sugar	0.1	0.6	0.1	0.7	0.5	0.8	0.0	0.1	0.6
Beverages and tobacco products	1.4	0.7	1.6	2.6	1.5	1.7	1.2	0.5	1.2
Other food products	4.8	4.1	5.2	4.4	4.7	3.7	2.5	1.9	2.6
Agro-food	15.7	13.0	14.9	23.9	14.5	16.1	15.9	7.5	15.1
Primary products	2.0	1.8	3.0	0.3	2.9	1.0	2.1	0.2	5.2
Fishing	0.1	0.0	0.8	0.4	0.3	0.4	1.1	0.3	0.5
Textiles and wearing apparel products	1.7	2.1	1.5	2.4	3.4	4.8	7.7	3.3	3.4
Petroleum and chemical products	6.6	6.8	9.0	6.5	5.8	6.6	8.5	5.7	7.9
Mineral and metal products	5.3	6.9	5.6	5.4	6.7	5.5	8.2	9.3	6.5
Vehicles and vehicle equipment	3.4	5.7	8.3	2.7	6.3	4.1	10.7	6.9	5.6
Other manufacture products	3.5	8.3	1.6	1.5	14.1	5.4	15.9	21.3	9.2
Industry	22.6	31.6	29.9	19.1	39.6	27.9	54.2	46.9	38.2
Transport	17.7	11.2	18.2	16.5	20.9	17.6	8.2	10.2	17.0
Other services	44.1	44.2	36.9	40.5	25.0	38.4	21.8	35.4	29.6
Services	61.8	55.4	55.1	57.0	45.8	56.0	30.0	45.6	46.6
Total	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Table B. 9. Impact on macroeconomic variables from a U.S.-Peru FTA, 2020

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Exports (vol _ no intra)	0.00	-0.02	0.18	-0.01	-0.22	6.96	-0.05	8.01	0.06
	304	1,194	1,004	506	2	16	8	10	24
Exports (vol)	0.00	-0.01	0.18	-0.01	-0.22	6.96	-0.05	8.01	0.06
	304	2,941	1,004	506	2	16	8	10	24
GDP (vol)	0.00	0.00	0.00	0.00	-0.03	0.03	-0.03	-0.12	-0.01
	825	9,224	11,770	4,706	9	97	28	66	123
Real effective exchange rate	-0.01	0.00	0.03	0.00	-0.10	-0.36	-0.09	-0.37	-0.05
Real return to capital	0.00	0.00	0.00	0.00	0.00	-0.14	0.02	0.05	0.00
Real return to land	-0.07	-0.01	0.05	0.00	-0.11	-0.95	-0.01	-0.82	-0.07
Real return to natural resources	0.00	-0.01	-0.04	0.00	0.39	-0.53	0.14	-0.39	0.14
Skilled real wages	0.01	0.00	0.00	0.00	-0.06	-0.18	-0.08	-0.55	-0.02
Unskilled real wages	0.00	0.00	0.00	0.00	-0.11	-0.08	-0.08	-0.41	-0.03
Unskilled real wages in agriculture	-0.03	0.00	0.03	0.00	-0.19	-0.47	-0.09	-0.57	-0.06
Unskilled real wages in non agricultural sectors	0.00	0.00	0.00	0.00	-0.08	-0.01	-0.08	-0.36	-0.03
Real income	0.00	0.00	0.00	0.00	-0.04	-0.10	-0.04	-0.19	-0.01

Table B.9. Continued

	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
	(in percent)								
Exports (vol _ no intra)	-0.05	-0.03	0.00	-0.03	-0.01	-0.05	-0.01	-0.01	-0.01
	35	76	26	3	184	67	490	206	1,357
Exports (vol)	-0.05	-0.03	0.00	-0.03	-0.01	-0.05	-0.01	-0.01	-0.01
	35	76	26	3	184	74	490	206	1,917
GDP (vol)	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
	306	578	81	20	705	271	1,830	555	5,534
Real effective exchange rate	-0.03	-0.01	-0.02	-0.01	-0.02	-0.02	-0.01	0.00	-0.01
Real return to capital	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00
Real return to land	-0.07	0.00	-0.07	-0.01	0.00	-0.01	0.00	0.01	0.00
Real return to natural resources	0.03	0.01	-0.01	-0.01	-0.01	0.01	0.00	-0.01	-0.01
Skilled real wages	-0.01	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00
Unskilled real wages	-0.02	0.00	-0.02	-0.01	0.00	-0.01	0.00	0.00	0.00
Unskilled real wages in agriculture	-0.06	-0.01	-0.04	-0.02	0.00	-0.01	0.00	0.00	0.00
Unskilled real wages in non agricultural sectors	-0.01	0.00	-0.02	-0.01	0.00	-0.01	0.00	0.00	0.00
Real income	-0.01	0.00	-0.01	0.00	0.00	-0.01	0.00	0.00	0.00

Source: Simulation results.

Table B.10. Impact on bilateral trade from a U.S.-Peru FTA, 2007

Exporters	Importers								
	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Canada		0.0	0.1	0.0	-0.4	-16.5	0.0	-21.7	-0.1
European Union - 27	0.1	0.0	0.1	0.0	-0.3	-8.6	-0.3	-9.2	-0.2
United States	-0.1	-0.1		-0.1	-0.4	35.3	-0.5	57.9	-0.3
Japan	0.1	0.0	0.1		-0.3	-13.8	-0.2	-16.6	-0.2
Bolivia	0.9	0.7	0.6	0.5		-4.9	-0.3	-3.6	-0.4
Colombia	2.6	1.9	15.2	2.4	1.9		2.3	0.0	3.7
Ecuador	0.6	0.5	0.7	0.6	0.0	-6.5		-2.8	0.4
Peru	2.8	1.9	31.5	2.8	1.1	-2.3	0.8		1.6
Venezuela	0.3	0.2	0.3	0.3	-0.1	-4.0	-0.1	-2.7	
Argentina	0.2	0.2	0.2	0.2	-0.2	-6.0	0.0	-14.1	-0.2
Brazil	0.1	0.1	0.1	0.1	-0.5	-6.0	-0.4	-3.8	-0.3
Chili	0.2	0.1	0.2	0.1	-0.4	-4.3	-0.5	-3.1	-0.3
Uruguay	0.2	0.1	0.0	0.1	-0.4	-7.2	-0.5	-4.2	-0.4
Mexico	0.0	0.0	0.0	0.0	-0.5	-5.0	-0.6	-3.1	-0.4
Rest of C&S America	0.1	0.1	-0.2	0.1	-1.1	-4.8	-0.4	-3.9	-0.6
China	0.1	0.0	0.0	0.0	-0.5	-5.3	-0.5	-3.2	-0.6
Korea	0.0	0.0	0.0	0.0	-0.5	-6.0	-0.5	-3.4	-0.3
Rest of the World	0.0	0.0	0.0	0.0	-0.5	-3.9	-0.5	-2.9	-0.4

Source: Simulation results.

Table B.10. Continued

Exporters	Imported								
	Argentina	Brazil	Chile	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
	(in percent)								
Canada	-0.1	-0.1	-0.1	-0.1	0.1	0.0	0.0	0.0	0.1
European Union - 27	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
United States	-0.2	-0.2	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	-0.2
Japan	-0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Bolivia	0.8	0.5	0.4	-0.1	0.6	0.7	0.6	0.6	0.6
Colombia	2.4	2.3	3.5	2.2	4.7	2.4	1.9	1.6	2.0
Ecuador	0.3	0.4	0.3	0.4	0.5	0.5	0.5	0.7	0.5
Peru	1.6	1.9	2.8	2.8	1.8	2.1	3.2	2.4	2.3
Venezuela	0.1	0.1	0.0	0.0	0.3	0.1	0.2	0.2	0.2
Argentina		0.2	0.0	0.1	0.3	0.1	0.2	0.2	0.5
Brazil	-0.1		-0.1	0.0	0.1	0.0	0.1	0.1	0.1
Chile	0.0	0.0		0.0	0.1	0.0	0.1	0.1	0.1
Uruguay	-0.1	0.0	-0.1		0.2	0.0	0.1	0.1	0.1
Mexico	-0.2	-0.1	-0.1	-0.1		-0.1	0.0	0.0	0.0
Rest of C&S America	-0.1	0.0	-0.1	0.0	0.1	0.0	0.1	0.1	0.1
China	-0.1	-0.1	-0.2	-0.1	0.0	-0.1		0.0	0.0
Korea	-0.2	-0.1	-0.1	-0.1	0.0	-0.1	0.0		0.0
Rest of the World	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.0	0.0	0.0

Source: Simulation results.

Table B.11. Impact on production by sector from a U.S.-Peru FTA, 2020

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Wheat	-0.58	0.05	1.04	0.28	-0.03	-9.47	-0.20	-10.86	0.16
Cereals	-0.02	-0.03	0.25	0.05	-0.08	-4.40	-0.39	-0.66	-0.02
Vegetables and fruits	-0.07	-0.02	0.01	0.00	0.00	0.12	0.19	-0.11	-0.12
Oilseeds	0.01	0.00	0.03	0.02	-1.18	-1.58	-1.62	0.99	-0.25
Other agricultural products	0.01	-0.01	0.03	0.00	-0.11	-0.57	-0.06	-0.09	-0.02
Meat	0.03	0.00	0.09	0.02	-0.08	-2.82	-0.47	-1.31	-0.11
Paddy and processed rice	0.07	0.00	0.14	0.00	-0.09	0.33	-0.27	0.68	-0.62
Raw milk and dairy products	0.00	-0.01	0.04	0.00	-0.65	-0.95	-0.03	-1.65	-0.01
Sugar	-2.72	-0.02	-0.75	-0.01	-0.44	11.53	-0.63	9.76	-0.32
Beverage and tobacco products	0.00	0.00	0.00	0.00	-0.01	-0.12	-0.02	-0.23	-0.01
Other food products	0.01	-0.01	0.03	0.00	-1.59	0.02	0.02	0.77	-0.05
Fishing	0.00	0.00	0.00	0.00	-0.10	-1.48	0.01	-0.24	-0.02
Primary products	0.00	-0.01	-0.03	-0.01	0.34	0.23	0.12	0.68	0.10
Textile and wearing apparel products	-0.08	-0.02	-0.09	0.00	-0.45	19.84	-1.23	7.82	-0.77
Petroleum and chemical products	0.00	-0.01	0.04	0.00	0.07	-0.24	-0.09	-2.33	-0.04
Mineral and metal products	0.04	0.00	0.00	0.00	0.48	-1.21	0.08	0.04	0.06
Vehicles and vehicle equipment	0.03	0.00	0.01	0.00	0.95	-3.51	0.19	-4.59	0.07
Other manufactured products	0.02	0.00	0.01	0.00	0.20	-0.95	0.02	-0.73	0.02
Transport and trade	0.00	0.00	0.00	0.00	-0.01	-0.09	-0.02	-0.01	-0.01
Other services	0.00	0.00	0.00	0.00	0.00	-0.18	0.00	-0.22	0.00

Source: Simulation results.

Table B.11. Continued

	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Wheat	-0.96	-0.55	-0.03	-0.04	0.19	0.18	0.01	0.17	0.06
Cereals	-0.08	0.01	0.00	-0.02	0.02	-0.02	-0.01	0.00	0.00
Vegetables and fruits	0.03	0.00	-0.07	0.01	-0.01	0.01	0.00	0.00	0.00
Oilseeds	0.08	0.02	0.01	0.03	0.02	-0.05	0.00	0.02	0.00
Other agricultural products	-0.01	0.00	-0.06	0.01	0.00	-0.02	0.00	0.01	-0.01
Meat	0.01	0.01	-0.11	0.05	0.01	0.01	0.02	0.01	0.01
Paddy and processed rice	0.05	-0.01	0.00	-0.13	0.04	0.01	0.00	0.00	0.00
Raw milk and dairy products	-0.01	-0.01	-0.12	-0.19	0.00	0.02	0.01	0.00	0.00
Sugar	-0.25	-0.08	-0.05	-0.19	-0.14	-0.46	-0.02	-0.03	-0.04
Beverage and tobacco products	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Other food products	0.02	0.00	-0.08	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02
Fishing	0.01	0.00	-0.05	-0.01	-0.01	0.00	0.00	0.00	0.00
Primary products	0.03	0.01	0.06	0.03	-0.01	0.03	0.00	-0.01	0.00
Textile and wearing apparel products	0.01	-0.08	-0.37	-0.04	-0.19	-0.33	-0.08	-0.10	-0.09
Petroleum and chemical products	0.02	-0.01	-0.08	-0.02	-0.03	0.00	0.00	-0.01	0.00
Mineral and metal products	0.06	0.00	0.11	0.00	0.02	0.06	0.01	0.01	0.01
Vehicles and vehicle equipment	0.11	0.00	-0.19	0.05	0.06	0.11	0.02	0.01	0.02
Other manufactured products	0.02	0.01	0.01	0.02	0.01	0.03	0.01	0.00	0.00
Transport and trade	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Other services	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00

Source: Simulation results.

Table B.12. Impact on macroeconomic variables from a EU27-CAN FTA, 2020

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Exports (vol _ no intra)	-0.01	0.31	-0.06	-0.02	1.83	5.63	8.18	8.13	3.49
	304	1,194	1,004	506	2	16	8	10	24
Exports (vol)	-0.01	0.10	-0.06	-0.02	1.83	5.63	8.18	8.13	3.49
	304	2,941	1,004	506	2	16	8	10	24
GDP (vol)	0.00	0.02	0.00	0.00	-0.01	-0.02	0.10	-0.04	-0.07
	825	9,224	11,770	4,706	9	97	28	66	123
Real effective exchange rate	0.00	0.03	-0.02	-0.01	-0.03	0.45	2.85	-0.90	-0.78
Real return to capital	0.00	0.03	0.00	0.00	-0.20	-0.48	-1.01	-0.20	-0.11
Real return to land	-0.01	-0.52	0.00	0.01	0.04	6.48	22.10	0.43	-0.29
Real return to natural resources	0.02	0.00	0.03	0.00	-0.73	-1.68	-3.84	-2.35	1.09
Skilled real wages	0.00	0.05	0.00	0.00	-0.16	-0.76	0.39	-0.39	-0.55
Unskilled real wages	0.00	0.01	0.00	0.00	-0.02	0.16	2.36	-0.12	-0.43
Unskilled real wages in agriculture	-0.01	-0.23	0.00	0.00	0.19	2.17	8.57	0.08	-0.53
Unskilled real wages in non agricultural sectors	0.00	0.03	0.00	0.00	-0.09	-0.24	1.29	-0.19	-0.41
Real income	0.00	0.03	0.00	0.00	-0.06	-0.08	0.63	-0.23	-0.22

Source: Simulation results.

Table B.12. Continued

	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Exports (vol _ no intra)	-0.09	-0.03	-0.07	-0.11	0.00	-0.07	0.00	-0.01	-0.01
	35	76	26	3	184	67	490	206	1,357
Exports (vol)	-0.09	-0.03	-0.07	-0.11	0.00	-0.06	0.00	-0.01	-0.01
	35	76	26	3	184	74	490	206	1,917
GDP (vol)	-0.01	0.00	-0.01	-0.02	0.00	-0.01	0.00	0.00	0.00
	306	578	81	20	705	271	1,830	555	5,534
Real effective exchange rate	-0.03	-0.02	-0.04	-0.03	0.00	-0.03	0.00	-0.01	-0.01
Real return to capital	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Real return to land	-0.05	-0.02	0.03	-0.09	0.01	-0.20	0.00	-0.01	-0.04
Real return to natural resources	-0.01	0.01	-0.06	0.00	0.01	0.12	-0.01	0.01	0.00
Skilled real wages	-0.01	0.00	-0.04	-0.02	0.00	0.00	0.00	-0.01	0.00
Unskilled real wages	-0.02	-0.01	-0.02	-0.04	0.00	-0.02	0.00	0.00	-0.01
Unskilled real wages in agriculture	-0.05	-0.02	-0.01	-0.10	0.00	-0.09	0.00	-0.01	-0.02
Unskilled real wages in non agricultural sectors	-0.01	0.00	-0.02	-0.03	0.00	-0.02	0.00	0.00	0.00
Real income	-0.01	0.00	-0.03	-0.02	0.00	-0.01	0.00	-0.01	0.00

Table B.13. Impact on bilateral trade from a EU27-CAN FTA, 2020

Exporters	Importers								
	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Canada		0.1	0.0	0.0	-5.7	-0.9	-0.8	-6.1	-9.1
European Union - 27	-0.1	-0.1	-0.1	-0.1	24.4	36.9	36.5	39.2	48.0
United States	0.0	0.1		0.0	-6.9	-6.3	-1.0	-9.8	-10.6
Japan	0.0	0.1	0.0		-8.0	-9.3	-2.6	-13.8	-12.2
Bolivia	-0.2	0.3	0.2	0.6		3.2	10.3	24.8	-2.9
Colombia	-2.5	40.3	-2.1	-3.5	-3.9		3.0	15.9	-7.5
Ecuador	-13.9	108.4	-13.6	-14.8	-16.0	-14.9		52.9	-23.8
Peru	6.8	13.0	6.1	6.8	5.1	6.9	18.5		2.8
Venezuela	2.5	9.9	2.4	3.8	2.3	3.7	9.6	29.8	
Argentina	0.2	-0.5	0.2	0.1	-1.1	-0.1	5.4	-3.6	-4.6
Brazil	0.1	-0.1	0.1	0.1	-1.4	-1.2	4.7	-6.4	-4.4
Chili	0.1	-0.3	0.1	0.2	-1.2	2.7	9.6	-8.8	-3.8
Uruguay	0.2	-0.5	0.2	0.2	-1.1	-4.8	7.2	-3.4	-9.8
Mexico	0.0	0.0	0.0	0.0	-1.9	-1.1	5.5	-7.5	-4.1
Rest of C&S America	0.0	-0.4	0.1	0.1	-0.6	-0.1	5.9	-3.9	-4.0
China	0.0	0.1	0.0	0.0	-2.1	-1.4	5.5	-5.6	-4.4
Korea	0.0	0.1	0.0	0.0	-2.1	-2.0	4.3	-5.9	-4.7
Rest of the World	0.0	0.0	0.0	0.0	-1.4	-0.4	6.4	-8.0	-4.3

Source: Simulation results.

Table B.13. Continued

Exporters	Importers								
	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Canada	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
European Union - 27	-0.2	-0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
United States	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bolivia	-0.6	0.9	0.3	0.2	0.4	0.0	0.7	1.0	0.8
Colombia	-2.2	-2.0	-2.2	-2.3	-2.3	-2.0	-7.6	-2.6	-2.9
Ecuador	-18.6	-12.8	-15.1	-19.2	-11.4	-11.2	-21.9	-11.6	-20.3
Peru	5.4	9.9	8.7	3.6	7.5	6.7	5.9	8.7	6.3
Venezuela	3.3	2.5	2.7	0.9	4.2	2.8	2.9	2.7	1.8
Argentina		0.1	0.1	0.0	0.2	0.1	0.1	0.2	0.1
Brazil	0.0		0.1	0.0	0.1	0.2	0.1	0.1	0.1
Chili	0.1	-0.1		0.0	0.0	0.0	0.1	0.2	0.1
Uruguay	0.1	0.1	0.2		0.4	0.1	0.2	0.1	0.2
Mexico	-0.1	-0.1	0.0	-0.1		0.1	0.0	0.0	0.0
Rest of C&S America	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.1
China	-0.1	-0.1	0.0	-0.1	0.0	0.0		0.0	0.0
Korea	-0.1	-0.1	0.0	-0.1	0.0	0.0	0.0		0.0
Rest of the World	-0.1	-0.1	-0.1	-0.2	0.0	0.1	0.0	0.1	0.0

Source: Simulation results.

Table B.14. Impact on production by sector from a EU27-CAN FTA, 2020

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Wheat	-0.09	0.22	-0.03	-0.04	0.03	-4.07	-2.25	0.99	0.88
Cereals	-0.01	0.24	0.00	-0.01	0.48	-1.90	-5.06	0.40	-0.28
Vegetables and fruits	-0.07	-3.72	-0.07	0.03	-0.20	23.68	54.51	0.57	1.78
Oil seeds	-0.03	0.21	-0.01	-0.02	0.55	-1.45	-7.28	1.01	0.95
Other agricultural products	0.03	0.18	0.03	0.00	0.03	-2.52	-5.21	0.47	-0.20
Meat	-0.03	0.14	-0.01	-0.02	0.32	-1.09	-1.65	-1.18	-0.87
Paddy and processed rice	-0.02	-0.33	-0.02	-0.01	-0.10	1.98	-1.91	0.26	0.54
Raw milk and dairy products	-0.02	0.29	-0.01	-0.01	7.08	-2.40	-1.80	-3.54	-4.05
Sugar	-0.02	-0.44	0.00	0.00	2.18	0.67	7.18	8.26	-0.97
Beverage and tobacco products	-0.01	0.06	0.00	0.00	-0.15	-0.32	-0.03	-0.23	-0.81
Other food products	-0.02	0.15	0.00	0.00	0.56	-0.70	-6.43	0.78	-0.39
Fishing	-0.01	0.01	0.01	0.00	0.11	-0.48	-1.90	-0.16	-0.34
Primary products	0.01	-0.04	0.02	0.00	-0.24	-0.64	-1.86	-2.50	1.15
Textile and wearing apparel products	0.00	0.14	-0.03	0.00	1.44	-2.66	-5.11	-0.31	-1.24
Petroleum and chemical products	0.00	0.09	-0.03	0.00	-1.24	-1.87	-1.60	0.84	0.13
Mineral and metal products	-0.01	0.06	-0.02	-0.01	-0.98	-3.26	-9.39	4.02	0.71
Vehicle and vehicle equipment	-0.04	0.09	-0.01	-0.01	-3.71	-5.20	-18.89	-2.38	-0.83
Other manufactured products	0.00	0.03	0.00	0.00	-0.46	-1.60	-3.02	-0.28	-0.69
Transport and trade	0.01	0.00	0.00	0.00	-0.02	-0.32	-0.09	0.11	-0.19
Other services	0.00	0.00	0.00	0.00	-0.05	-0.09	0.21	-0.13	-0.14

Source: Simulation results.

Table B.14. Continued

	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Wheat	0.02	-0.03	0.07	0.01	-0.03	0.09	-0.01	-0.01	-0.02
Cereals	0.00	0.01	0.02	0.00	0.00	0.05	-0.01	-0.01	0.00
Vegetables and fruits	-0.66	-0.85	0.02	-0.86	0.03	-0.74	0.00	0.00	-0.08
Oil seeds	0.05	0.00	0.06	0.03	-0.01	0.10	-0.02	0.00	0.00
Other agricultural products	0.01	0.01	0.05	0.05	0.00	0.07	-0.01	0.00	0.00
Meat	-0.01	-0.01	0.01	0.04	0.00	0.02	-0.02	-0.01	-0.02
Paddy and processed rice	0.03	0.00	0.01	-0.05	0.00	0.03	0.00	0.00	0.00
Raw milk and dairy products	-0.09	-0.01	-0.31	-0.61	-0.02	0.01	-0.02	-0.01	-0.03
Sugar	0.02	-0.01	0.06	-0.03	0.00	-0.06	-0.02	-0.01	-0.03
Beverage and tobacco products	-0.01	0.00	-0.05	-0.01	0.00	0.00	0.00	0.00	0.00
Other food products	0.06	0.01	0.17	0.02	0.01	0.05	-0.02	0.00	-0.01
Fishing	0.04	0.01	0.07	0.02	0.00	0.01	0.00	0.00	0.00
Primary products	0.00	0.01	-0.19	-0.03	0.01	0.15	-0.02	0.06	0.00
Textile and wearing apparel products	0.02	0.00	0.04	0.12	0.01	0.06	0.00	0.01	0.01
Petroleum and chemical products	0.00	0.00	-0.11	0.06	-0.02	-0.09	0.00	-0.03	0.00
Mineral and metal products	0.01	-0.03	-0.01	0.03	-0.03	0.00	0.00	-0.02	-0.01
Vehicle and vehicle equipment	0.06	-0.01	-0.23	0.14	0.00	0.02	0.00	-0.01	0.01
Other manufactured products	0.01	0.01	0.00	0.07	0.00	0.01	0.00	0.00	0.01
Transport and trade	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Other services	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00

Source: Simulation results.

Table B.15. Impact on macroeconomic variables from U.S.-Peru and EU27-CAN FTAs combined, 2020

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Exports (vol _ no intra)	-0.01	0.28	0.11	-0.02	1.59	12.01	8.14	15.41	3.53
	304	1,194	1,004	506	2	16	8	10	24
Exports (vol)	-0.01	0.09	0.11	-0.02	1.59	12.01	8.14	15.41	3.53
	304	2,941	1,004	506	2	16	8	10	24
GDP (vol)	0.00	0.02	0.00	0.00	-0.03	0.06	0.08	-0.09	-0.08
	825	9,224	11,770	4,706	9	97	28	66	123
Real effective exchange rate	-0.01	0.02	0.01	-0.01	-0.14	0.19	2.77	-1.08	-0.82
Real return to capital	0.00	0.03	0.00	0.00	-0.21	-0.59	-1.00	-0.06	-0.11
Real return to land	-0.08	-0.53	0.06	0.01	-0.06	5.60	22.14	-0.33	-0.35
Real return to natural resources	0.02	0.00	0.00	0.00	-0.35	-2.25	-3.76	-2.79	1.20
Skilled real wages	0.00	0.04	0.00	0.00	-0.22	-0.80	0.32	-0.79	-0.57
Unskilled real wages	0.00	0.01	0.00	0.00	-0.13	0.16	2.29	-0.44	-0.46
Unskilled real wages in agriculture	-0.04	-0.24	0.03	0.00	0.00	1.80	8.52	-0.39	-0.58
Unskilled real wages in non agricultural sectors	0.00	0.02	0.00	0.00	-0.17	-0.16	1.23	-0.45	-0.44
Real income	0.00	0.02	0.00	0.00	-0.10	-0.11	0.60	-0.31	-0.23

Table B.15. Continued

	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Exports (vol _ no intra)	-0.13	-0.05	-0.07	-0.14	-0.01	-0.12	0.00	-0.03	-0.02
	35	76	26	3	184	67	490	206	1,357
Exports (vol)	-0.13	-0.05	-0.07	-0.14	-0.01	-0.11	0.00	-0.03	-0.02
	35	76	26	3	184	74	490	206	1,917
GDP (vol)	-0.01	0.00	-0.02	-0.02	0.00	-0.01	0.00	0.00	0.00
	306	578	81	20	705	271	1,830	555	5,534
Real effective exchange rate	-0.07	-0.03	-0.05	-0.04	-0.02	-0.06	-0.01	-0.01	-0.02
Real return to capital	-0.01	-0.01	0.00	0.00	0.00	-0.01	0.00	0.00	0.00
Real return to land	-0.12	-0.01	-0.04	-0.10	0.01	-0.21	0.00	0.00	-0.04
Real return to natural resources	0.03	0.02	-0.07	-0.01	0.01	0.14	-0.01	0.00	-0.01
Skilled real wages	-0.02	-0.01	-0.05	-0.02	-0.01	0.00	0.00	-0.01	0.00
Unskilled real wages	-0.03	-0.01	-0.04	-0.05	-0.01	-0.03	0.00	-0.01	-0.01
Unskilled real wages in agriculture	-0.11	-0.02	-0.04	-0.11	0.00	-0.10	0.00	-0.01	-0.02
Unskilled real wages in non agricultural sectors	-0.02	-0.01	-0.04	-0.03	-0.01	-0.02	0.00	-0.01	-0.01
Real income	-0.02	-0.01	-0.04	-0.02	-0.01	-0.02	0.00	-0.01	-0.01

Source: Simulation results.

Table B.16. Impact on bilateral trade from U.S.-Peru and EU27-CAN FTAs combined, 2020

Exporters	Importers								
	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Canada		0.0	0.1	0.1	-6.1	-16.3	-0.7	-25.4	-9.1
European Union - 27	-0.1	-0.1	0.0	-0.1	24.1	24.5	36.2	26.8	47.8
United States	0.0	0.0		-0.1	-7.2	29.0	-1.4	45.1	-10.8
Japan	0.1	0.1	0.1		-8.2	-20.5	-2.7	-25.6	-12.3
Bolivia	0.6	0.9	0.8	1.1		-1.4	10.0	20.9	-3.2
Colombia	-0.3	42.3	12.1	-1.7	-2.5		4.9	16.6	-4.5
Ecuador	-13.4	109.0	-13.0	-14.4	-16.0	-19.8		49.9	-23.6
Peru	8.7	14.1	37.5	8.6	5.3	4.0	18.4		3.5
Venezuela	2.8	10.1	2.6	4.1	2.2	0.0	9.5	27.2	
Argentina	0.4	-0.4	0.4	0.3	-1.2	-5.5	5.5	-16.8	-4.7
Brazil	0.1	0.0	0.2	0.2	-1.9	-6.4	4.5	-8.8	-4.6
Chili	0.2	-0.2	0.3	0.3	-1.6	-1.2	9.2	-10.8	-4.1
Uruguay	0.4	-0.4	0.2	0.2	-1.4	-10.3	6.8	-6.5	-10.0
Mexico	0.0	0.0	0.0	0.0	-2.3	-5.5	5.0	-9.5	-4.4
Rest of C&S America	0.2	-0.3	-0.1	0.2	-1.6	-4.4	5.6	-6.9	-4.5
China	0.0	0.1	0.0	0.0	-2.5	-6.1	5.1	-7.7	-4.8
Korea	0.0	0.1	0.0	0.0	-2.5	-7.3	4.0	-8.2	-5.0
Rest of the World	0.0	0.0	0.0	0.0	-1.8	-3.8	6.0	-9.7	-4.6

Table B.16. Continued

Exporters	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Canada	-0.1	-0.1	0.0	-0.1	0.1	0.0	0.0	0.1	0.1
European Union - 27	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
United States	-0.2	-0.2	-0.1	-0.2	-0.1	-0.2	-0.1	-0.1	-0.1
Japan	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
Bolivia	0.1	1.3	0.7	0.2	0.9	0.7	1.2	1.5	1.3
Colombia	-0.3	-0.1	0.8	-0.6	1.6	-0.1	-6.3	-1.6	-1.4
Ecuador	-18.5	-12.6	-14.8	-18.9	-11.0	-10.8	-21.6	-11.0	-20.0
Peru	6.1	10.7	10.5	5.5	8.5	7.9	8.2	10.2	7.7
Venezuela	3.5	2.7	2.7	0.9	4.5	2.8	3.0	2.9	1.9
Argentina		0.2	0.1	0.1	0.4	0.3	0.2	0.3	0.6
Brazil	-0.1		0.0	0.0	0.2	0.2	0.1	0.2	0.1
Chili	0.0	0.0		0.0	0.1	0.0	0.2	0.3	0.2
Uruguay	0.1	0.1	0.1		0.5	0.1	0.3	0.2	0.2
Mexico	-0.2	-0.1	-0.1	-0.2		0.0	0.0	0.0	0.0
Rest of C&S America	-0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.2	0.2
China	-0.2	-0.1	-0.2	-0.2	0.0	-0.1		0.0	0.0
Korea	-0.3	-0.2	-0.1	-0.2	0.0	-0.1	0.0		0.0
Rest of the World	-0.2	-0.2	-0.2	-0.2	0.0	0.0	0.0	0.1	0.0

Source: Simulation results.

Table B.17. Impact on production by sector from U.S.-Peru and EU27-CAN FTAs combined, 2020

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Wheat	-0.67	0.27	1.02	0.25	-0.01	-13.42	-2.45	-10.24	1.02
Cereals	-0.03	0.20	0.26	0.04	0.39	-6.27	-5.44	-0.30	-0.30
Vegetables and fruits	-0.14	-3.74	-0.05	0.03	-0.20	24.00	54.78	0.47	1.68
Oil seeds	-0.02	0.22	0.03	0.00	-0.54	-3.21	-8.72	1.89	0.67
Other agricultural products	0.04	0.17	0.07	0.00	-0.09	-3.20	-5.26	0.38	-0.21
Meat	0.01	0.13	0.09	-0.01	0.19	-3.92	-2.00	-2.23	-0.98
Paddy and processed rice	0.06	-0.35	0.14	0.00	-0.18	2.42	-2.16	0.98	-0.15
Raw milk and dairy products	-0.02	0.28	0.02	-0.01	6.28	-3.26	-1.83	-4.61	-4.04
Sugar	-2.70	-0.48	-0.74	-0.01	1.74	11.76	6.66	18.45	-1.24
Beverage and tobacco products	-0.01	0.06	0.00	0.00	-0.15	-0.37	-0.05	-0.41	-0.81
Other food products	-0.01	0.13	0.02	0.00	-0.88	-0.57	-6.45	1.33	-0.44
Fishing	0.00	0.01	0.00	0.00	0.01	-1.95	-1.90	-0.34	-0.36
Primary products	0.01	-0.04	-0.01	-0.01	0.09	-0.54	-1.79	-2.27	1.23
Textile and wearing apparel products	-0.07	0.11	-0.12	0.00	1.03	16.62	-6.21	7.78	-1.93
Petroleum and chemical products	0.00	0.08	0.01	-0.01	-1.14	-2.11	-1.63	-1.41	0.09
Mineral and metal products	0.03	0.06	-0.02	-0.01	-0.47	-4.53	-9.28	3.58	0.77
Vehicle and vehicle equipment	0.00	0.08	0.00	-0.01	-2.80	-8.84	-18.70	-6.71	-0.77
Other manufactured products	0.01	0.03	0.00	0.00	-0.25	-2.47	-2.99	-0.99	-0.67
Transport and trade	0.00	0.00	0.00	0.00	-0.03	-0.39	-0.10	0.11	-0.20
Other services	0.00	0.00	0.00	0.00	-0.05	-0.21	0.21	-0.30	-0.14

Source: Simulation results.

Table B.17. Continued

	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
	(in percent)								
Wheat	-0.93	-0.57	0.05	-0.02	0.16	0.27	0.00	0.16	0.04
Cereals	-0.08	0.01	0.02	-0.02	0.02	0.03	-0.01	0.00	-0.01
Vegetables and fruits	-0.64	-0.86	-0.05	-0.86	0.03	-0.73	0.00	-0.01	-0.08
Oil seeds	0.12	0.02	0.06	0.06	0.01	0.05	-0.02	0.02	0.00
Other agricultural products	0.01	0.00	0.00	0.06	0.00	0.06	0.00	0.00	-0.01
Meat	0.01	0.00	-0.08	0.08	0.00	0.03	0.00	0.00	-0.02
Paddy and processed rice	0.08	-0.01	0.00	-0.15	0.04	0.05	0.00	0.00	0.00
Raw milk and dairy products	-0.09	-0.01	-0.38	-0.73	-0.02	0.03	-0.01	-0.01	-0.03
Sugar	-0.23	-0.09	0.02	-0.22	-0.14	-0.51	-0.05	-0.05	-0.06
Beverage and tobacco products	-0.01	0.00	-0.04	-0.01	0.00	0.01	0.00	-0.01	-0.01
Other food products	0.08	0.01	0.11	0.01	0.00	0.04	-0.03	-0.02	-0.03
Fishing	0.05	0.01	0.04	0.01	0.00	0.01	0.00	0.00	-0.01
Primary products	0.04	0.02	-0.13	0.00	0.01	0.18	-0.01	0.05	0.00
Textile and wearing apparel products	0.03	-0.08	-0.30	0.08	-0.18	-0.28	-0.07	-0.09	-0.08
Petroleum and chemical products	0.02	-0.01	-0.17	0.05	-0.05	-0.08	0.00	-0.04	0.00
Mineral and metal products	0.07	-0.02	0.08	0.03	-0.01	0.07	0.01	-0.01	0.00
Vehicle and vehicle equipment	0.16	-0.01	-0.39	0.18	0.05	0.13	0.02	0.00	0.03
Other manufactured products	0.03	0.02	0.01	0.08	0.01	0.04	0.01	0.00	0.01
Transport and trade	0.00	0.00	0.01	0.02	0.00	0.02	0.00	0.00	0.00
Other services	-0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00

Table B.18. Impact on macroeconomic variables from a China-Peru FTA, 2020

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Exports (vol _ no intra)	0.00	0.00	0.00	0.00	-0.01	-0.02	-0.02	4.49	-0.01
	<i>304</i>	<i>1,194</i>	<i>1,004</i>	<i>506</i>	<i>2</i>	<i>16</i>	<i>8</i>	<i>10</i>	<i>24</i>
Exports (vol)	0.00	0.00	0.00	0.00	-0.01	-0.02	-0.02	4.49	-0.01
	<i>304</i>	<i>2,941</i>	<i>1,004</i>	<i>506</i>	<i>2</i>	<i>16</i>	<i>8</i>	<i>10</i>	<i>24</i>
GDP (vol)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00
	<i>825</i>	<i>9,224</i>	<i>11,770</i>	<i>4,706</i>	<i>9</i>	<i>97</i>	<i>28</i>	<i>66</i>	<i>123</i>
Real effective exchange rate	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.04	0.00
Real return to capital	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	-0.16	0.00
Real return to land	0.00	0.00	0.00	0.00	0.04	0.01	0.01	1.33	0.00
Real return to natural resources	0.00	0.00	0.00	0.00	0.02	0.03	0.01	0.16	0.01
Skilled real wages	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.02	0.15	0.00
Unskilled real wages	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.40	0.00
Unskilled real wages in agriculture	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.81	0.00
Unskilled real wages in non agricultural sectors	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.26	0.00
Real income	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.11	0.00

Source: Simulation results.

Table B.18. Continued

	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
	(in percent)								
Exports (vol _ no intra)	0.00	-0.01	-0.01	0.00	0.00	0.00	0.07	0.00	0.00
	35	76	26	3	184	67	490	206	1,357
Exports (vol)	0.00	-0.01	-0.01	0.00	0.00	0.00	0.07	0.00	0.00
	35	76	26	3	184	74	490	206	1,917
GDP (vol)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	306	578	81	20	705	271	1,830	555	5,534
Real effective exchange rate	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Real return to capital	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Real return to land	0.02	0.00	0.01	0.00	0.00	0.00	-0.02	0.00	0.00
Real return to natural resources	-0.01	0.01	0.01	-0.02	0.00	0.00	-0.02	-0.01	0.00
Skilled real wages	0.00	0.00	-0.02	0.00	0.00	0.00	0.01	0.00	0.00
Unskilled real wages	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Unskilled real wages in agriculture	0.01	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00
Unskilled real wages in non agricultural sectors	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Real income	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00

Source: Simulation results.

Table B.19. Impact on bilateral trade from a China-Peru FTA, 2020

Exporters	Importers								
	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Canada		0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0
European Union - 27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	0.0
United States	0.0	0.0		0.0	0.0	0.0	0.0	-0.1	0.0
Japan	0.0	0.0	0.0		0.0	0.0	0.0	-1.2	0.0
Bolivia	0.0	0.0	0.0	0.0		-0.3	-0.2	0.6	-0.2
Colombia	0.1	0.1	0.1	0.1	0.0		0.0	-3.4	0.0
Ecuador	0.0	0.1	0.1	0.1	0.0	0.0		-1.4	0.0
Peru	0.1	0.1	-0.2	0.7	0.0	0.3	-0.3		0.0
Venezuela	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1	
Argentina	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	1.3	0.0
Brazil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-4.9	0.0
Chili	0.1	0.1	0.1	0.1	0.0	0.0	0.0	-2.8	0.0
Uruguay	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	1.3	0.0
Mexico	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-4.3	0.0
Rest of C&S America	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.1	0.0
China	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	107.0	0.0
Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-6.4	0.0
Rest of the World	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.6	0.0

Source: Simulation results.

Table 19. Continued

Exporters	Importers								
	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
	(in percent)								
Canada	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
European Union - 27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
United States	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bolivia	0.0	0.0	-0.1	-0.2	0.0	0.0	0.1	0.0	0.0
Colombia	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
Ecuador	0.0	0.0	0.0	0.1	0.0	0.1	-0.1	0.1	0.0
Peru	0.0	0.1	-0.2	1.1	-0.1	0.0	24.8	0.1	0.5
Venezuela	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Argentina		0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
Brazil	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chili	0.0	0.1		0.0	0.1	0.0	0.0	0.1	0.1
Uruguay	0.0	0.0	0.0		0.0	0.0	-0.1	0.0	0.0
Mexico	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Rest of C&S America	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
China	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Rest of the World	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Simulation results.

Table B.20. Impact on production by sector from a China-Peru FTA, 2020

	Canada	European Union - 27	United States	Japan	Bolivia	Colombia	Ecuador	Peru	Venezuela
	(in percent)								
Wheat	0.05	0.00	0.02	0.01	0.05	0.03	-0.01	0.63	0.01
Cereals	-0.01	0.00	0.00	0.00	0.06	0.00	0.01	1.44	0.00
Vegetables and fruits	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.13	0.00
Oil seeds	-0.02	-0.01	-0.01	0.00	0.31	0.02	0.03	1.86	0.01
Other agricultural products	0.00	0.00	0.00	0.00	0.03	0.01	0.01	1.31	0.00
Meat	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.20	0.00
Paddy and processed rice	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	1.17	0.00
Raw milk and dairy products	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.76	0.00
Sugar	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.88	0.00
Beverage and tobacco products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00
Other food products	0.00	0.00	0.00	0.00	-0.28	-0.01	0.01	6.41	0.00
Fishing	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.30	0.00
Primary products	0.00	0.00	0.00	0.00	0.02	0.02	0.01	0.00	0.01
Textile and wearing apparel products	0.00	0.00	0.00	0.00	-0.43	-0.08	-0.03	-1.21	0.00
Petroleum and chemical products	0.00	0.00	0.00	0.00	-0.01	-0.03	-0.02	-0.54	-0.01
Mineral and metal products	0.00	0.00	0.00	0.00	0.01	0.01	-0.05	0.07	-0.01
Vehicle and vehicle equipment	0.00	0.00	0.00	0.00	-0.09	-0.01	-0.11	-2.48	0.00
Other manufactured products	0.00	0.00	0.00	0.00	-0.04	-0.03	-0.04	-0.71	0.00
Transport and trade	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.12	0.00
Other services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00

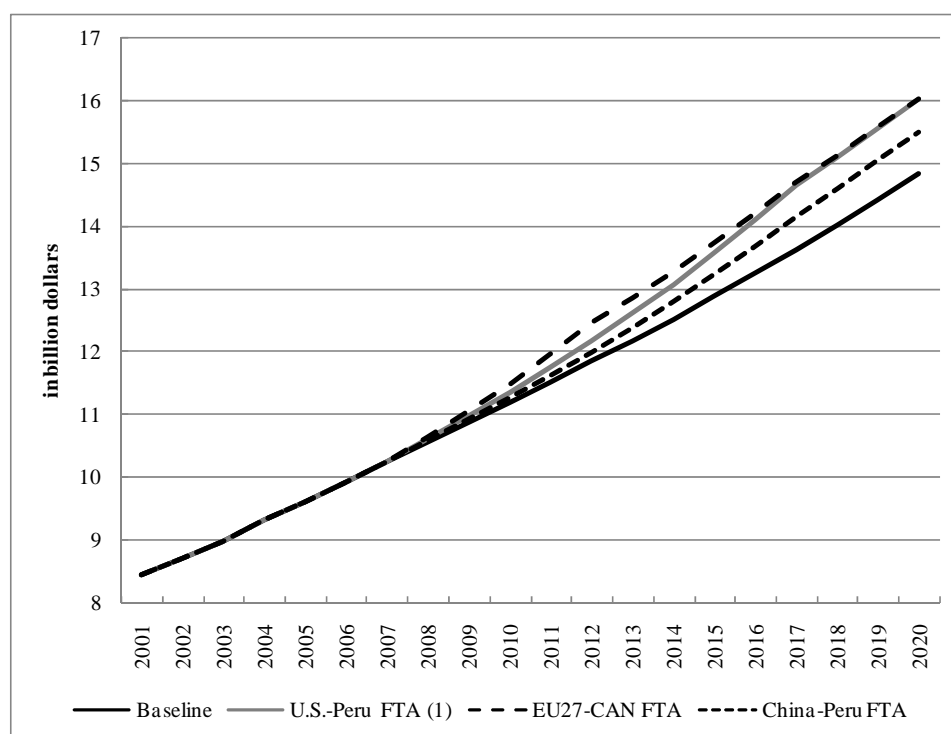
Source: Simulation results.

Table B.20. Continued

	Argentina	Brazil	Chili	Uruguay	Mexico	Rest of C&S America	China	Korea	Rest of the World
Wheat	0.13	0.07	-0.02	-0.01	0.01	0.01	0.00	0.00	0.00
Cereals	0.07	0.00	0.00	-0.01	0.00	0.00	-0.06	-0.01	0.00
Vegetables and fruits	-0.01	0.00	0.02	0.00	0.00	0.00	-0.03	0.00	0.00
Oil seeds	-0.02	-0.01	-0.02	-0.01	0.00	0.00	-0.03	0.00	-0.01
Other agricultural products	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Meat	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Paddy and processed rice	-0.01	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
Raw milk and dairy products	0.00	0.00	0.01	0.00	0.00	0.00	-0.01	0.00	0.00
Sugar	-0.01	0.00	-0.03	0.00	0.00	0.00	-0.03	0.00	0.00
Beverage and tobacco products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other food products	-0.03	0.00	-0.09	-0.03	0.00	-0.01	-0.18	-0.01	-0.03
Fishing	-0.02	0.00	-0.03	-0.02	0.00	0.00	-0.02	0.00	-0.01
Primary products	0.00	0.01	0.07	0.00	0.00	0.00	-0.01	0.00	0.00
Textile and wearing apparel products	-0.01	-0.01	-0.08	0.00	0.00	0.00	0.04	-0.01	0.00
Petroleum and chemical products	0.00	0.00	-0.03	-0.01	0.00	0.00	0.01	0.00	0.00
Mineral and metal products	-0.01	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle and vehicle equipment	-0.01	-0.01	-0.23	-0.01	0.00	0.00	0.02	0.00	0.00
Other manufactured products	0.00	0.00	-0.04	0.00	0.00	0.00	0.02	0.00	0.00
Transport and trade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Simulation results.

Figure B.1. Evolution of Peru's exports from trade liberalization scenarios, between 2001 and 2020



Source: Simulation results.

Note: Results from the U.S.-Peru FTA (2) are not shown because they are relative to a different baseline.

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